THE IRON AGE

THURSDAY, SEPTEMBER 20, 1888.

The Harlow Automatic Lubricator.

A new form of lubricator, ingenious in construction, and positive and automatic in action, is at present being put on the market by Mr. Amos Aller, 109 Liberty street, New York. The engravings which we publish on this page, representing both general and sectional views, clearly explain the arrangement of the device and its method of working.

An examination will show that the lubricator is practically a pump, worked through a rack and pinion combination, B C, seen in Fig. 2. The rod A in Fig. 1 receives its motion from some moving portion of the machine to be lubricated, and conveys this motion to the pump plunger within the reservoir cup. As the lever to which the rod is attached is hung on an axle, the rod may be carried to any desired angle to receive its motion. The reservoir cup is filled with oil, and the quantity to be taken from this reservoir and delivered to any part of the machine to be lubricated, is determined by the use of the numbered wheel at left. This is more clearly shown in the vertical section, Fig. 2, the wheel there being marked A.

In Fig. 2 the outlet valve is marked D; F is a strainer over the suction chamber and U represents the suction port; H is a removable base. An enlarged view of the suction chamber is given in Fig. 4. In Fig. 3 we show a vertical section of the sight-feed, which, we need perhaps scarcely remark, is fitted in between the exit-pipe of the lubricator proper and the point at which the lubricant is to be delivered. The engraving explains itself, though, to be more explicit, we add the following reference letters: J, valve stem; K, union; U, packing for glass tube; MM, lock nuts; N, base, holding glass tube; O, cap; P, valve chamber; Q, nut and spring in lower part of valve chamber; R, valve; V, nipple, to screw into steam pipe.

Being operated by some moving portion of the engine or machine to be lubricated, the Harlow lubricator starts and stops with the engine or machine being lubricated, without requiring attention from the engineer or operator. The oil is fed to any desired spot in perfectly regulated quantities, either in small drops at frequent intervals, or in large drops less frequently, or the oil may be delivered in a nearly continuous stream, at the pleasure of the operator. This regulated supply not only insures economy in oil, but gives an even, perfect and continuous lubrication. Any oil, thick or thin, if free from grit, may be used. The cup can be filled at any moment while the engine or machine being lubricated is in operation, without causing any leak either of oil or steam.

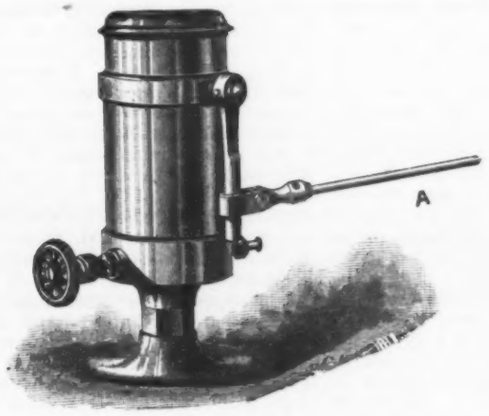


Fig. 1.—General View of Lubricator.

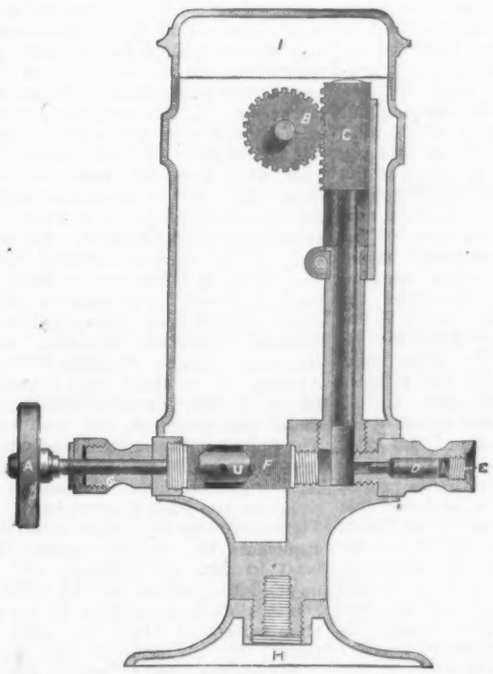


Fig. 2.—Vertical Section.

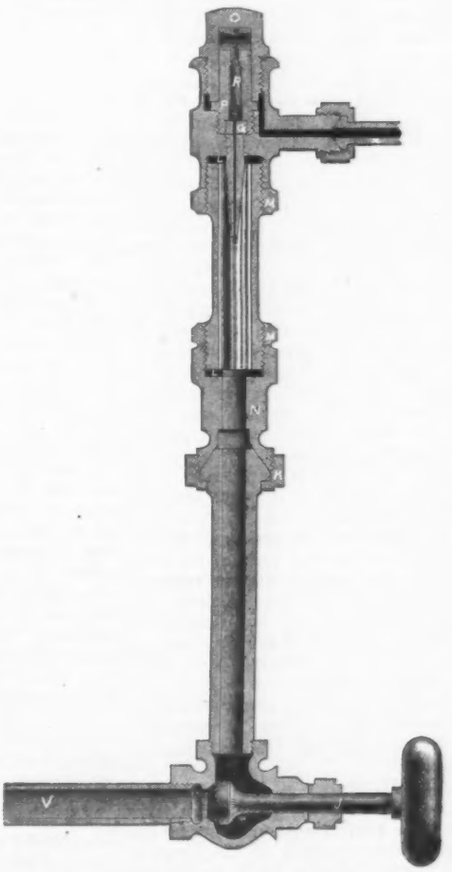


Fig. 3.—Vertical Section of Sight Feed.

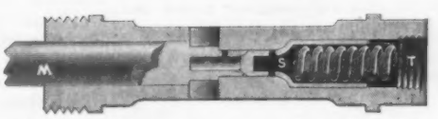


Fig. 4.—Enlarged View of Suction Chamber.

THE HARLOW AUTOMATIC LUBRICATOR FOR LOCOMOTIVE, MARINE AND STATIONARY ENGINES.

The device is not affected by varying temperature, and can be used in the most exposed situations without danger of freezing, as there is no water used in or about it. Its different parts are all made to gauges, so that in case of breakage they can be easily and quickly replaced.

Industries of Providence, R. I.

The Franklin Machine Company, better known as the old Franklin Foundry, has nearly completed the first of an order of five web perfecting printing presses, which is a new departure for these works, and, so far as known, for any machine works in this city. The work is being done for the Duplex Printing Press Company, of Battle Creek, Mich. The machine, which is 21 feet long and 4 feet 6 inches high, is intended to print 32, 64, 128 or 256 page pamphlets, fold, wire-stitch and cover them at a speed, for the smaller number of pages, of 80,000 copies per diem. In the stitching and covering alone one of these machines supplants over 100 girls, who did the work by hand. All the presses made by the Duplex Company have for their groundwork the inventions of the late Joseph L. Cox, and they bear his name The new press appears to be quite simple. It has but one plate cylinder, flanked on either side by an impression cylinder of equal diameter. The paper is fed from a roll on a standard near the floor, and, as in the Bullock press, is cut before entering the machine. After having one side printed, the sheet, which entered on the right, is carried by tapes over the top of the press to the extreme left. Here it is carried down slightly until what was the rear edge is seized by the grippers of a platen cylinder and is presented to the plate cylinder at another part of its revolution, and the second side is printed. The sheet then goes off into a folder with adjustable guiding throat and double delivery, and is then folded as many times as may be desired, and stitched with steel wire. Another attachment still, in the form of a supplementary press, will print a cover and insert it at the proper place, to be finished up and folded with the pamphlet.

Mr. John H. Brown, a former resident of this city, has for the past eight years been at work perfecting a machine for the economical decortication of the fibers of tropical plants, valuable to the textile and paper making industries, and now has his machines in successful operation.

The Board of Assessors have completed a revaluation of city property, consisting of real and personal estate. The total is $136,753,700, of which $35,837,840 is personal, the increase over the preceding year's valuation being $2,731,980. Among the persons and corporations taxed for more than $50,000 are the following:

American Screw Company		$1,048,520
Armington & Sims Engine Company		89,200
Amos C. Barstow and wife		534,080
Barstow Stove Company		94,960
Boston and Providence Railroad Company:		
Core street station	$380,180	
India Point station	141,580	
		521,760
Brown & Sharpe Mfg. Company		376,940
Builders' Iron Foundry		127,940
City Machine Company		59,960
George H. Corliss estate		100,000
Corliss Steam Engine Company		397,520
Franklin Foundry and Machine Company		121,000
William H. Harris Steam Engine Company		75,060
Household Sewing Machine Company		273,560
New England Butt Company		105,260
New York and New England Railroad Company		164,120
New York, Providence and Boston Railroad Company		464,040
Nicholson File Company		199,960
Phenix Iron Foundry		153,500
Providence Machine Company		167,080
Providence and Worcester Railway Company		613,620
Rhode Island Locomotive Works		365,120
Slater Mill and Power Company		148,960
Thomas J. Hill		255,720
Rhode Island Tool Company		151,720

Mr. Benjamin Easton, Jr., Sheriff of Newport County, who, about two years ago, purchased the coal mine property in Portsmouth, R. I., but for agricultural rather than for mining purposes, is negotiating for the sale of the property to the Worcester Steel Works, who propose to utilize the mine. The mine has been abandoned for a number of years as impracticable to be profitably worked. The coal is not good for home consumption, but is considered of fair quality for smelting purposes, and it is for this purpose that the Worcester Steel Works propose to use it. They intend to begin at once, upon the completion of the purchase, the work of pumping out the mine, which will consume considerable time, as it has been abandoned so long that the shafts are practically filled up. It is possible that the company may transfer their works to the neighborhood of the mine, which would seem to be a more advantageous plan than the shipping of the coal mined to the present location of the works at Worcester. The sale is expected to be consummated in a few days.

Two of the railroads running into this city have introduced, to some extent, an improvement which, while it may not be noticed by one passenger in a hundred, nevertheless contributes to his comfort in a marked degree, and is a measure of safety and even of economy in the long run. It is probably known to all who use the railways that passenger cars are now coupled by what is known as a vertical plane drawbar, which has taken the place of the loose link and is now required by law in most States. This, with the accompanying buffers, makes a train practically solid, there being no slack between the cars to cause shocks in stopping and starting. The same reasons which dictated the close coupling between cars obtain with even more force in regard to the coupling between the tender and the head of the train. Some of the engines now working the Providence division of the Old Colony are from the company's former equipment and have the Miller coupler-hook on the back end of the tender, the same as on the cars, save that it is uncoupled by means of a hand wheel in place of the customary lever. The New York, Providence and Boston road has a hook-coupler handled by a small lever.

Some of the numerous inventions of the late George M. Cruickshank, of this city, are worthy of more than a mere mention. While it is generally known that he ranked high as a machinist it is probable that many, even those familiar with his line of business, never knew the fertility of his mind and the variety of his inventions. He was certainly one of the leading mechanics of New England, and his name was familiar in nearly every country in which steam is used for industrial development. His whole life was spent in the study of machinery, and it was said of him the he was able not only to understand the most intricate piece of mechanism, but also to suggest improvements, practicable and valuable. The peculiar ability was known and recognized throughout New England, and much of his time was spent in consultation with manufacturers, who seldom if ever were disappointed in obtaining the remedies solicited.

George Cruickshank was a born mechanic. He and his brother David came to this country in the hope of finding an enlarged field, and in less than five years after arriving in the United States George Cruickshank patented an invention which was immediately recognized as one of value by the engineers of both continents. While foreman of the Hope Iron Works he hit upon a plan for doing away with hemp packing secured around the piston-rods of steam engines. In March, 1871, he introduced his "metallic packing," a contrivance as simple as it was effective, and 17 years of use have proved its incomparable superiority over the old method. It consisted of two rings, each cut into four segments, which fitted tightly to the piston-rod as it moved through them. The wear was taken up by spiral springs between the segments and an outside brass case. Power was gained by the lessening of friction, and when the rod vibrated the packing accommodated itself to every change of position.

Mr. David Cruickshank, now in business at 243 Dyer street, was then in Boston, working for the Fitchburg Railroad. At the request of his brother he came to Providence, to help put the improved packing on the market. It was first manufactured at the Hope Iron Works, but in January, 1872, the brothers leased Charles A. Mann's shop on North Main street, and formed a partnership under the name of William R. Smith & Co. George held the foremanship at the Hope Iron Works until June, 1872, when, his health failing, he went to join Mr. Smith in Europe, to see to the disposing of patent rights in Great Britain, leaving David in charge of the North Main street manufactory. He returned in October, and the following month they hired a room in the east end of the Dyer street building occupied by George at the time of the fatal accident. The plant was enlarged and the firm name changed to George M. Cruickshank & Co. In May, 1875, Mr. Smith withdrew, while David sold out his interest to George in the spring of 1880. But it was by the Shipman engines that Mr. Cruickshank was best known, and it can be said that his reputation was world-wide soon after he began their manufacture. Shipman was a Rochester (N. Y.) mechanic, who conceived the idea of generating steam with oil for engines of light power, but his plan, while possessing merit, was not well developed. Mr. Cruickshank followed up the idea, and produced a boiler that answered every requirement. For the first time oil was successfully used instead of coal under a boiler, and a brisk export trade followed the completion of the engine. Orders came from Australia, New Zealand, Argentine Republic, England, Germany, France, Sweden, Norway and Austria. A company was organized in Boston in 1885, and for a time Mr. Cruickshank was president, but soon resigned. The Shipman engines are used with good results on small river boats and in manufacturing establishments whose machinery could be run with 6 horse-power or less. The late George H. Corliss invariably sent applicants for smaller engines than he built to Mr. Cruickshank, and recommended the engines of the latter as the "best slide-valve engines in the world," an indorsement which was often accompanied by the opinion that the Dyer street machine-maker ranked among the most skilled and useful of American mechanics.

LEONIDAS.

Professor Kolrausch has recently estimated the quantity of electricity in a flash of lightning. He finds that from 7 to 35 flashes would be required to keep an ordinary incandescent lamp alight for an hour.

In the race to Edinburgh last month some of the best running was performed on the North-Eastern Railway, England, by the compound engines designed by Mr. Worsdell. The engines in question have driving-wheels 6 feet 9 inches in diameter, with a high-pressure cylinder 18 inches, and a low-pressure cylinder 26 inches in diameter by 24-inch stroke.

The Mason Ingot Manipulator.

Among recent improvements in the steel works of the Bellaire Nail Works, at Bellaire, Ohio, is the establishment of an ingot manipulator, designed by Mr. Orland P. Mason, and serving the purpose of turning the ingot on the table and moving it into the desired position. The engravings which we present on this page explain the main features of the machine, which, it will be understood, is used in connection with a two-high mill.

In the rolling operation the ingot is fed to the rolls by means of tables having driven rollers on which the ingot lies, and by which it is moved backward and forward as it is passed to and fro through the rolls. During the operation it is frequently necessary to turn the partially worked piece on its edge, and also to move it from one side of the table to the other. In case of a blooming mill making a variety of sizes, this work has always been done by hand. By Mr. Mason's arrangement this is accomplished by power.

The machine embraces a horizontal shaft, D, extending under the table rollers at right angles with the rolls. On this shaft five to seven arms, F, are placed, about 6 feet long. The shaft is revolved by a pinion, G, and rack, H, driven by a hydraulic cylinder, J. The arms F are curved on the upper side, and when revolved the points come up under the ingot and turn it over. A further revolution moves it into the desired position. The length of stroke of the hydraulic cylinder is such as to allow the shaft D, with its arms, to make one complete revolution. From Fig. 1 it will be noticed that the arms extend upward between the rollers C C. The rack H which is attached to the piston-rod I of the hydraulic cylinder is supported on grooved rollers, K. The operation of the machine scarcely requires explanation. The ingot having been placed on the rollers C is manipulated in the usual way until it becomes necessary to turn it. The rollers then bring it to a position which will enable it to be moved by the arms F. Steam or water is let into the cylinder J, moving the rack forward and turning the shaft D. This causes the arms F to catch the piece on its lower corner and turn it over. After turning, if it is desirable to move it still further, the rotation is continued in the same manner, and the piece may be moved to any desired position upon the table.

The machine is simple in construction, and, within certain limits, appears to be effective. Its economy consists in dispensing with the labor of two to three men on each turn. The principle appears to be correct, and only needs the trials of experience to perfect it.

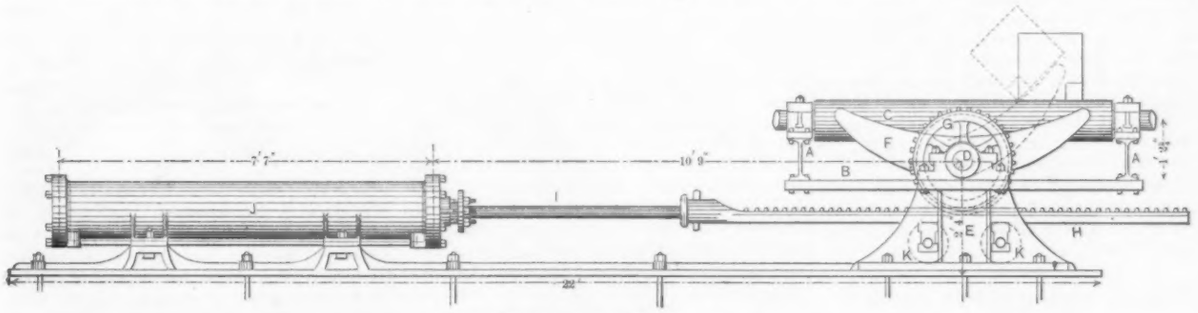


Fig. 1.—Side Elevation.

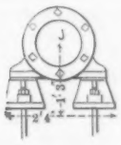


Fig. 2.—End Elevation.

Fig. 3.—End Elevation.

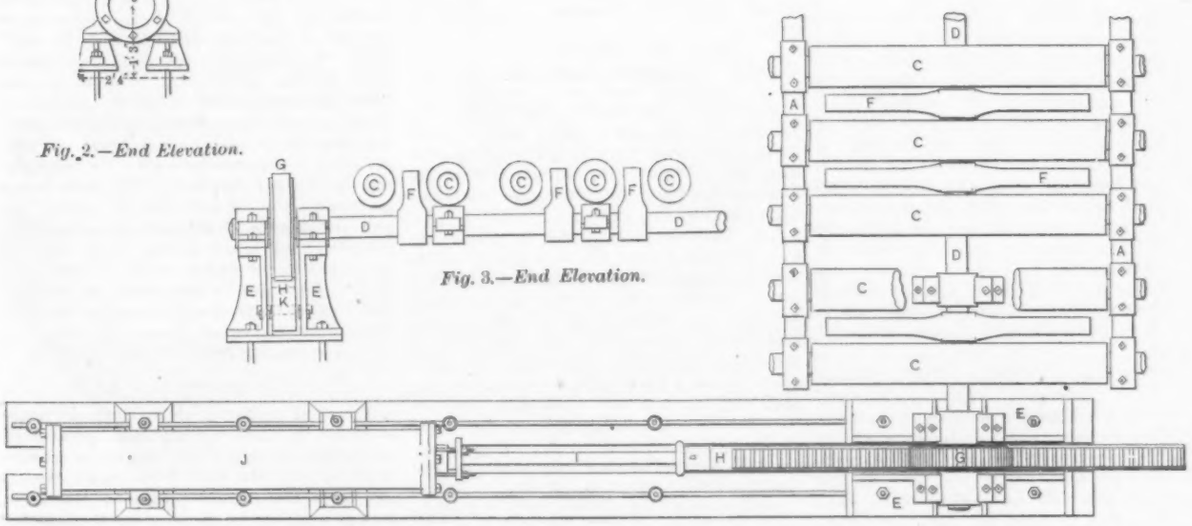


Fig. 4.—Plan.

INGOT MANIPULATOR AT THE BELLAIRE NAIL WORKS, BELLAIRE, OHIO.

Coppered Carbons.

Probably nearly every electric arc lighting company now electroplate their carbons. The *Electrical Engineer* says that in the dark ages of 1879 there was an interference in our much abused patent office between the two well-known inventors, Charles F. Brush and Moses G. Farmer, in relation to the coppering of electric light carbons, and it was held by Paine, commissioner, that Farmer had invented the process in controversy before Brush, but had also abandoned it, so that while priority was therefore awarded to Brush *pro forma*, the invention was thrown open to the public by Farmer's prior invention and failure to patent. But as a matter of fact Jablochkoff had, as early as 1876, plated the carbons of his candles with copper; and though the invention had prior to that time been patented in France by Reynier, Jablochkoff disdained to recognize the Reynier patent, depending upon prior patents and publications; and it appears that Jablochkoff was right, since the Reynier patent was subsequently voided by the French courts, and held to be anticipated by a prior Carré patent and by Van Malderen's work in 1868. Bouliguine and Tchikoleff, also in Russia, plated their carbons, and published accounts of their practice.

The history of this feature of electric lighting is closely paralleled by many other features; and all other branches of applied electricity likewise disclose similar instances of anticipation. Electric lighting, however, is so old an art in itself, although commercially young, that inventors in this field cannot go far without running foul of something which had been invented (though very likely not much employed) years before.

Pictet's New Ice Machine.

One of the objects creating considerable attention at the Jubilee Exhibition at Vienna, is the new ice machine devised by M. Pictet, of Geneva, who has come to Vienna to personally superintend his exhibit and introduce this machine in Austria. In general principles the machine does not differ from others, but there are some important modifications in detail. Instead of using sulphurous acid, as in his previous machines, M. Pictet uses a mixture of sulphurous acid and carbonic acid,

to which we referred at greater length about a year ago, and which has received the name of "liquide pictet." The boiling point of this liquid under atmospheric pressure is at −19° C. and at a temperature of +50° C. the pressure of the gas is only half that of pure sulphurous acid. The inventor has some theory, according to which there takes place an actual chemical combination of the molecules of the two gases when they are being liquefied under pressure, and it is due to this property that the work expended in compression is much smaller than in any other working agent. The "liquide pictet" is not inflammable, and can even be used for the extinction of fires. It has the further advantage of leaving a greasy dew upon the surfaces of the cylinder, piston-rod, valves, &c., rendering special lubrication unnecessary. The generator consists of a system of seamless copper pipes communicating with a chamber, at the bottom of which the liquid enters, while the gas is drawn off from the upper part. The arrangement of pipes is such as to facilitate an efficient circulation throughout the whole of the generator. The pump is provided with clack valves, but to avoid the risk of breakage each valve is controlled by two springs, one pressing it down on its seat, and the other acting as a stop when it rises.

Edison's Phonograph in England.

The expectation that Mr. Edison's phonograph would soon be rendered "loud-speaking"—capable, that is to say, of communicating its message to several hearers at once, without the intervention of tubes extending from the instrument to their ears—has already been abundantly fulfilled, according to the London *Times*. Colonel Gouraud received a large party of visitors recently, in order to exhibit to them the second instrument which he has received from America, and which, being furnished with a sort of speaking trumpet, from which its sounds issue, is distinctly audible to a large group of persons. It was accompanied by a set of cylinders carrying the traces of much talking, as well as of much vocal and instrumental music, and all these, when they were put into the machine, yielded up their record with truly marvelous fidelity. One cylinder had been impressed with the habitual noises of Mr. Edison's workshop, and the listeners were entertained by a succession of sounds produced in the first instance on an anvil, with sandpaper, by a sounding telegraph and in various other ways too numerous to mention. Another cylinder addressed the company in Mr. Edison's name and in his voice, while a third yielded up a song from Faust, and a fourth, "The Barefooted Friar," the traces upon all these having been made in America. Mrs. Shaw, the lady who is widely known as "La Belle Siffleuse," was among the company, and, after she had whistled to a cylinder, the phonograph was made to reproduce her notes with astonishing accuracy, and, presumably in consequence of the more intense character of the vibrations, much more loudly than those of speech or song.

Engine and Boilers of an Old Warship.

The London *Engineer* in a recent issue published a number of interesting engravings showing the arrangement of engines and boilers fitted on board the British warship Terrible in 1842:

The Terrible was the most powerful warship at that date. She was 1847 tons burden, with a length between perpendiculars of 226 feet and a breadth of beam of 42 feet 6 inches. The engines were of 500 nominal horse-power, and worked up to about 2000 indicated power, with a pressure of steam of 7 pounds per square inch, the engines making 15 to 16 revolutions per minute. There were four cylinders, 72 inches diameter, with a stroke of 8 feet. The boilers were double-ended tubular boilers placed across the vessel and fired athwartships. They were four in number, two being placed forward and two abaft the engines; these were the first tubular boilers of large size that were fitted in an Admiralty vessel. There were in all 24 furnaces, with an area of fire-grate of 437 square feet, and 3360 tubes 2¼ inches diameter and 5 feet long, the boilers having altogether a heating surface of 12,700 square feet; each boiler weighed 26 tons. About the time that these engines were fitted a demand had arisen for engines of a lighter description than the old side-lever engines and that would occupy less space in the vessel. Among the different types that came into use at the time engines of similar description to those of the Terrible were among the most successful, and between the years 1841 and 1851 55 sets of these engines were fitted into vessels having a total power of 48,000 horses. The Terrible was always looked upon as a most successful vessel. Her sea qualities were fully tested during the fearful gale at Balaclava on October 25, 1854, when the steamship Prince and so many other vessels were lost. On that occasion the Terrible towed a line-of-battle ship out of the Bay in the teeth of the gale into a place of safety. The type of engines built for and fitted in the Terrible was largely employed in the Italian, Russian, Spanish, Turkish and Danish navies, as well as the British.

Professor Clausius.

Germany's foremost physicist, Dr. Rudolph Julius Emanuel Clausius, died on the 24th and was buried on the 27th ult., at Bonn, on the Rhine. From the London *Engineer* we extract the following brief biographical sketch:

Dr. Clausius was born at Cöslin, in Pommerania, on the 2d of January, 1822, and finished his academical studies at Berlin, where he also began his teaching career as private tutor at the university, and was at the same time lecturer on physics at the Artillery College. In 1855 he was called as Professor of Physics to the Polytechnic school at Zürich, and was then installed there, in 1857, to the chair in the same science at the University. In 1867 he returned to his fatherland as professor at Würzburg, and lastly he joined the corps of professors at the Fried. Wilhelm University at Bonn, where he became one of its most distinguished ornaments. As an authority and teacher on the subject of heat he took a prominent rank. Clausius was the first to confirm and place the crude discoveries on the theory of heat promulgated by Dr. Mayer, of Heilbron, on a rigidly scientific basis in his treatise on the mechanical theory of heat, completed in two volumes in 1867, the foundation of which he had laid at Zürich in 1857 in his popular treatise entitled "The Nature of Heat Compared with that of Light and Sound." Besides the above works he wrote the two books, "The Potential Function and the Potential" and "Concerning the two Chief Propositions in the Mechanical Theory of Heat." Most of our readers are so well acquainted with the important works of Clausius that it is unnecessary in announcing his loss to do more than to remind them of how great a part he took in building up the modern notions concerning the dynamical theory of heat and its convertibility into work. The deceased was a member of many scientific societies, both in his own and foreign countries, and was decorated with several royal orders. His manner of teaching was as exact as the science he professed—firm and methodical—and he was popular for all that, among the students and his colleagues, and his loss will be for a long time felt as leaving a gap in his science not so easily filled, as he was a great master of the science he had taken up.

Weight of Torpedo Boats.

In a first-class torpedo boat, 135 feet long, with engines of 1400 I. H. P., as built for the British Navy, the general distribution of weight is about as follows:

	Tons.
Hull and fittings	40
Machinery	34
Armament	8
Coal	10
Stores, equipment and men	12
Displacement	104

In a second-class torpedo boat the total weight would be distributed as follows:

	Tons.
Hull and machinery, including water in boiler	9.25
Coal	1.50
Stores, equipment and men	1.75
Displacement	12.50

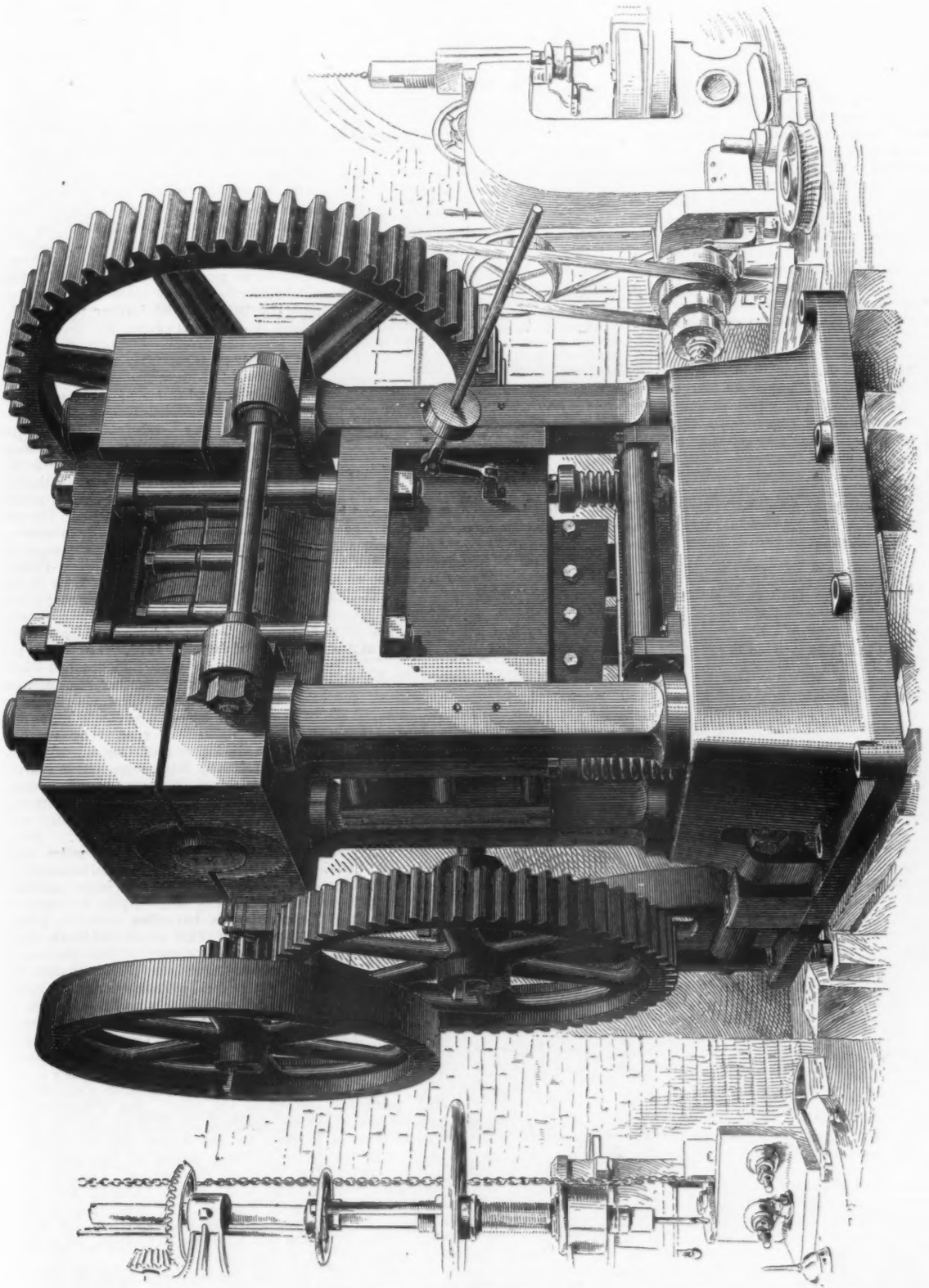
Tinning by Simple Immersion.—A method of tinning by simple immersion is described by *L' Echo des Mines et Metallurgie*. Argentine, it says, is a name given to tin precipitated by galvanic action from its solution. This material is usually obtained by immersing plates of zinc in a solution of tin containing 6 grams—about 90 grains—of the metal to the liter—0.88 quart. In this way tin scrap can be utilized. To apply the argentine according to M. P. Marino's process, a bath is prepared from argentine and acid tartrate of potash rendered soluble by boric acid. Pyrophosphate of soda, chloride of ammonium, or caustic soda may be substituted for the acid tartrate. The bath being prepared, the objects to be coated are plunged therein, first having been suitably pickeled and scoured, and they may be subjected to the action of an electric current. But a simple immersion is enough. The bath for this must be brought to ebullition, and object of copper or brass or coated therewith may be immersed in it.

The skin plating in many torpedo boats is only $\frac{1}{16}$ inch thick, and protective measures against even slight corrosion must therefore be rigidly enforced. Securing phosphor bronze plates to the steel frames has been tried as a protection for the bottom plating, but on the whole an efficient inspection system has been found most satisfactory. According to the British Admiralty regulations all boats in use must be docked for inspection every two months, and in addition the decks are covered with a specially prepared cement.

The call for draft regulators on locomotives shows that the old practice of throwing open the fire-box door when an engine was making steam too freely is no longer satisfactory. A nozzle that will make an engine steam freely while working hard and slow will exert very little effect on the fire when the engine is passing out a small volume of steam expanded down toward the atmospheric line. On the other hand, when the nozzle is made small enough to cut the fire when the engine is working light, it will tear the fire when working slow. Air openings have, therefore, been applied to the bottom of the smoke-boxes, and with good results. They are covered by sliding plates, operated from the cab. The device is easily worked and there is almost no danger from the escape of sparks through the openings.

Forty-Ton Shear.

We take pleasure in presenting on this page an engraving of a large shear built by Messrs. B. W. Payne & Sons, of Elmira, N. Y., for the Elmira Rolling Mill Company, and now in regular work. The design is at once suggestive of great solidity and strength, the tool being intended for heavy work, and the various parts accordingly being of massive proportions. A very heavy base is provided, from which rise four wrought-iron columns, 7 inches square. Those support two massive boxes, which, in turn, carry the eccentric shaft. The columns also serve as guides for the shear ram. The eccentric shaft is 10 inches in diameter at the ends and 14 inches through the eccentric, and carries a large gear-wheel shown at the right in the illustration. It will be observed that the machine is double geared, being driven from the back shaft which carries the heavy balance-wheel at the left. The ram, mentioned above, carries the upper shear blade, while the lower one is fastened to the base. The sides of the ram have adjustable gibbs, which are fitted accurately to the square columns and serve the purpose of maintaining perfect alignment of the ram as it is carried up and down. A 12-inch belt supplies the power. The shear weighs about 40 tons, and has a capacity to shear plates 2½ inches by 36 inches.



FORTY-TON SHEAR, BUILT BY MESSRS. B. W. PAYNE & SONS, ELMIRA, N. Y.

For the first time in some months there is a scarcity of cars in the Connellsville coke region. The outlook for relief in the near future is not good, in view of the fact that shipments of corn will commence in a short time. This will necessarily divert a great many more cars, and it is expected the consequence will be an advance in the price of coke. The yards in the region are now being stocked up, and it is impossible to get cars to move the product.

Aluminium Alloys by the Heroult Process.

The Swiss Metallurgical Company, of Lauffen-Neuhausen, Canton Schaffhausen, Switzerland, is engaged in successfully producing alloys of aluminium on a large scale, making use of the Héroult patent process. This process, according to the *Engineering News*, consists in melting down certain refractory metallic compounds by the electric current and with the aid of certain electrodes, and in subsequently reducing the metals contained therein by electrolysis. The negative electrode is here the metal to be alloyed to aluminium, as copper, iron, tin, the positive electrode being the carbons immersed in the molten alumina.

The current is supplied by two dynamos, each of 6000 amperes and 20 volts, driven by a 300 horse-power Jonval vertical turbine, while a separate dynamo of 300 amperes and 65 volts is used as an exciter. The main difficulty to be overcome by the projectors of these works was the production of a current powerful enough for the work to be performed. The enormous dynamos designed for this purpose were constructed at the Oerlikon machine works, Switzerland. They make but 180 revolutions per minute. The magnetic field, having six poles, consists of a single casting weighing 11 tons for each machine. The armature used is constructed on the Brown patent design. Each machine is furnished with two large collectors and contains not less than 72 brushes. Copper cables of the size of a man's arm serve to conduct the current from the dynamos to the furnace.

The melting takes place in a crucible, or basin, of electrical carbon surrounded by a metallic wrapping into which the current enters (negative pole), the basin thus forming part of the circuit. Metallic copper, broken up into small pieces is first placed in the basin, which is then covered up by means of plates of graphite, care being taken to fill up all open joints with powdered charcoal. In the center of the graphite cover, a space is left for the introduction of the suspended carbon slabs to which the positive cable is affixed. The carbons are then lowered toward the copper, which is soon melted by the current passing through it. Alumina is now added to the copper through locks arranged for that purpose, while the carbons are somewhat raised. The current passing through the alumina melts and reduces the same, the oxygen burning the carbon and escaping as carbonic oxide gas, while metallic aluminium becomes alloyed with the molten copper. By drawing back a carbon stopper, the contents of the basin may now be emptied out into a ladle or ingot. The basin is then recharged after the manner above described, making the process a continuous one.

As mentioned above, the position of the carbon slabs in the basin requires to be regulated according to the resistance. This may be accomplished by an automatic device in the form of a chain holding up the carbons and is connected with a reversible dynamo-electro motor regulated by the amperemeter. The intensity of the current found to be best adapted for the process is 12,000 to 13,000 amperes, the electro-motive force being from 12 to 15 volts, though it was found that the output of the dynamos could be easily increased to 25,000 amperes without causing any disturbance to the same. The same process may be followed for obtaining all other alloys of aluminium, excepting those metals which become volatilized at the melting point of aluminium. Mixed alloys, too, may be directly produced by this method—*i. e.*, copper, silicon and aluminium, by melting down clay containing silica as well as alumina.

The capacity of the plant above described is stated to be 660 pounds of aluminium per day, or 6600 pounds of bronze containing 10 per cent. of aluminium. The heats may be continued day and night for months without stopping. A series of tests, made by Professor Tetmajer, of the Polytechnikum at Zürich, illustrating the high tensile strength and ductility of the products of these works, will be of general interest to our readers:

Metal.	Tensile strength (in pounds per square inch).	Elongation (per cent).
Aluminium bronze "A"..	49,200	25.4
" B	54,600	27.4
" C	51,760	34.3
" D	68,260	37.5
" E	73,380	39.2
" F	79,630	23.0
" G	88,300	18.5
" H	91,000	7.0
Aluminium Brass.....	68,400	20.7
* Gun steel.....	78,200	14.0
* Wrought iron.....	54,000	22.0
* Delta metal.....	54,000	20.0
* Common bronze.....	32,700	8.0
* Phosphor bronze.....	41,240	17.9
* Manganese bronze.....	41,240	17.0
* Durana metal.....	51,200	22.0

*The tests marked thus * were made by Professor Tetmajer for the purpose of verification.

Fast Time on American Railroads.

The liveliest interest was manifested by railroad men in the account of the recent race between the Flying Scotchman and the West Coast Flyer from London to Edinburgh, in which 400 miles were covered by the winner in 7 hours and 25 minutes. This was an average of something over 53½ miles per hour. The New York *Times* referring to the event at the time said:

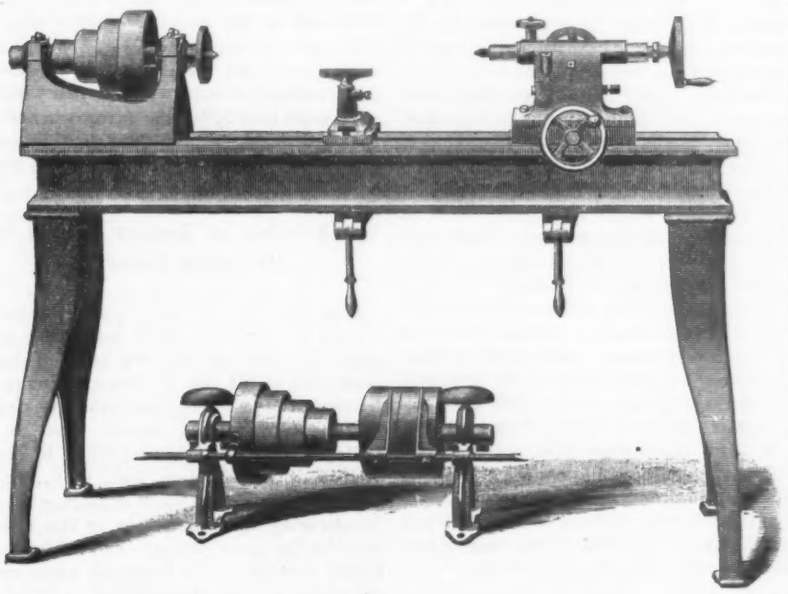
There was a general jogging of memories and overhauling of the records of fast railroad trains on American lines. And much comfort was found by many in going over those records. For they show that although the British and French roads admittedly make much better time habitually than is made on any of the American lines, some astonishing and sustained rates of speed have been attained here, when special efforts were expended with that end in view. The best run on record in this country which can be fairly compared with the English run was made over the West Shore Road from Buffalo to New York on July 9, 1885, when 426 miles were covered in 7 hours 27 minutes. Quite a large number of railroad men, including officials of the Baltimore and Ohio, Wabash, Grand Trunk, and West Shore roads happened at Buffalo together *en route* for New York. It was decided to see how quickly they could move over the new road. At the start the railroad men had their watches out, and soon the mile-posts were flying past every 43 seconds. That speed was held so steadily that the greater part of the run was made at the rate of 45 seconds to the mile, or from 70 to 83 miles an hour. From East Buffalo to Genesee Junction, 61 miles, took 56 minutes; from East Buffalo to Newark, 93.4 miles, 97 minutes; from Alabama to Genesee Junction, 36.3 miles, 30 minutes. The 97 minutes to Newark included stops of 9 minutes, making the actual running time for the 93.4 miles, 88 minutes. From Newark to Frankfort, where the conditions for running were not so good as before, the run of 108.3 miles was made in 134 minutes, including 17 minutes for stops. From East Buffalo to Frankfort, 202 miles, the time was 240 minutes, of which 35 minutes were consumed in stops. There was only a single track at that time on the road a good part of the way between Buffalo and Syracuse, and that journey had to be made at reduced speed, especially over the switches. The journey was timed with the utmost care for the purpose of tabulation. In the table there are marked several miles which were made at the speed of 78 miles an hour, one at 84 miles, and the next, between Genesee Junction and Chili, at 87 miles. New engines took the train at Buffalo, Newark, Frankfort and Coeymans.

On October 8, 1885, over the same road, a burst of speed was tried for 11 miles, between Genesee Junction and East Buffalo, to satisfy Superintendent J. E. Layng, who was on the train. The run occupied 512 seconds, an average rate of 74 miles an hour. Three of the miles were made at the rate of 80 miles an hour, 1 at 77, and 1 at 75. On the New York Central Road a newspaper train with two cars, weighing 60 tons, hauled into Syracuse, Sunday morning, August 8, 1886, at 10 o'clock, an hour late. The train was booked to go from New York to Buffalo in 9½ hours. Orders came to try to make up the time on the further run of 148.7 miles to Buffalo. John W. Cool, one of the best engineers on the road mounted his cab, bound to obey the order. He started out at 54½ miles an hour. At the end of 3 miles his speed increased to 66 miles an hour and then to 74½. He stopped at Rochester for water, and slowed up after passing Crittenden. His average speed from Syracuse to Rochester was 67¼ miles per hour, from Rochester to Buffalo 63.72 miles per hour, and from Syracuse to Buffalo 65.6 miles an hour. The run of 148.7 miles was made in 136 minutes.

The most remarkable long-distance run on record was when the Jarrett-Palmer combination went from New York to San Francisco in half time, or three and a half days. Their train left the Pennsylvania station in Jersey City at 12.53 on the morning of June 1, 1876. They were not to make a stop until they reached Pittsburgh. An engine and baggage car, on the approach of the special to Harrisburg got up a speed of about 50 miles and passed mails to the special by running along an adjoining track for several miles, while the mail bags were thrown from train to train. The run to Pittsburgh, 438½ miles, took 10 hours and 5 minutes, an average of 43½ miles an hour, notwithstanding the Alleghenies. From Pittsburgh to Chicago, 458.3 miles, took 11 hours and 6 minutes, an average of 42.1 miles, including 25 stops and four changes of engines. From Chicago to Council Bluffs, 491 miles, took 11½ hours, an average of 42.6 miles, although there was a record for part of this journey of 62.2 miles. Over the Union Pacific the run of 1032.8 miles from Omaha to Ogden was made in 24 hours and 14 minutes, at an average of 41 miles, and a maximum of 72 miles an hour. The brakes became worn at Ogden and hand brakes had to be used, retarding the onward journey somewhat, as the men feared they might lose control of the train. San Francisco was safely reached at 12.57 on June 4, quite in time for the dinner that had been ordered for the company for that day. The last stage of the journey was run at an average of 37 miles. During the entire run 20 engines were used, there were 72 stops, and the running time for 3313½ miles was 84 hours 17 minutes, an average of 40 miles an hour.

On the Pennsylvania Road 45 miles an hour is not uncommon, and there are level stretches where a speed of a mile a minute is attained. Samuel Carpenter, the general agent of the road for this city, said yesterday that if there was any need of making time to compare with the new English schedule it could be done. On the New York Central Road the run of 80 miles from Rochester to Syracuse has been made in 80 minutes when it was necessary

to make up lost time. Assistant Superintendent Voorhees of the New York Central said that he stood ready any day to send a party from New York to Buffalo, 440 miles over that road, in the same time made by the English racer for 400 miles, if the party would pay $2 a mile to get there in 7 hours and 25 minutes.



HIGH SPEED LATHE, BUILT BY CHARLES H. BESLY & CO., CHICAGO, ILL.

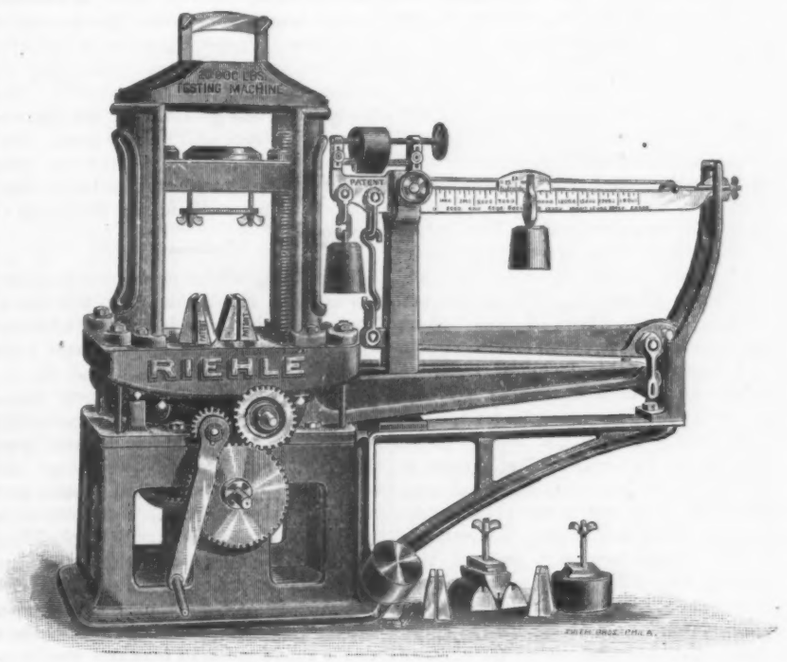
New Speed Lathe.

We show on this page a new speed lathe which is being put on the market by Messrs. Charles H. Besly & Co., 175–177 Lake street, Chicago, Ill. This lathe is designed to meet the wants of brass-workers and light metal workers. It has a 5-foot bed, swings 15 inches, weighs 600 pounds and has a hollow spindle with a $\frac{9}{16}$-inch hole. The live spindle is of steel running in babbitt-metal boxes. The front bearing is $1\frac{1}{4}$ x 3 inches. The cone has four grades of speed for a 2-inch belt. The tail-stock has a set-over and a quick-return spindle. The countershaft has tight and loose pulleys, 7 x $2\frac{1}{2}$ inches, and should make 250 revolutions per minute. The lathe is well made in every respect and the wear is evenly distributed over the frictional and strained parts.

New Testing Machine.

Messrs. Riehlé Brothers, Philadelphia, Pa., are turning out a new and improved screw-power testing machine for tensile, transverse and compression tests, combining the elements of accuracy, speed and facility in handling. The engraving which we annex explains the construction.

The machine is constructed of the best materials and the levers adjusted to the standard weights of the United States Government. There are three different speeds for testing a specimen and also for driving in the opposite direction. This allows of all the possible requirements of a wide range of material. There are no loose weights, and a single traveling poise, operated by a light hand-wheel, registers the strain accurately by means of a vernier. The power is applied by a crank with loose sleeve handle. Tools are furnished with the machine for making the various tests, and there are stops and holders for the grips, &c., as well as bolts and cushions for checking the recoil and keeping the platform in place. The levers are arranged in tandem style, so that the machine will take up as little room as possible and allow a clear deck for transverse tests. As the size of this compact machine is not very great, it is advisable to mount it on a solid wooden platform, from 16 to 18 inches high, so as to bring the crank and beam to a convenient working hight, and made to suit the size of the machine base. The crank can be slipped on any of the three key-end shafts, and thus secure three changes of speed in testing. On stopping the crank the machine will maintain the pressure on the specimen as long as desired. The machine is being built in the following sizes: 10,000 pounds, 20,000 pounds, 30,000 pounds, 60,000 pounds, 100,000 pounds and 200,000 pounds capacity, and can be built of increased capacity on order.



NEW TESTING MACHINE, BUILT BY MESSRS. RIEHLE BROS., PHILADELPHIA, PA.

The Coke Trade.

The recent improvement in the coke trade still continues, and the present outlook for that industry is better than for some months past. The demand continues to grow in sympathy with the recouping iron market. The pig iron situation has not been more encouraging for months past, and the improvement is specially noted in the West where coke is used almost exclusively as fuel. With the improved demand for coke and the consequently increased shipments, a scarcity of cars is already being experienced by the operators. The shortage has been growing more and more marked for some time past, and, unless a decided change soon takes place, it is feared that a veritable car famine will occur. The estimated output for the week ending on September 8th was 100,365 tons, against 103,974 tons for the previous week. The falling off is due to the idleness of a large works, in the region where a strike is in progress. From the same cause the active ovens have also decreased from 10,103 to 9837, leaving 3241 still idle. The shipments for the week aggregated 5850 cars distributed as follows: To Pittsburgh and suburban points, 1220 cars; to Western points, 3130 cars; to points East of the Connellsville region, 1500 cars. The shipments for the previous week were as follows: Pittsburgh, 1250 cars; West, 3550 cars; East, 1750 cars; total, 6550 cars. The large falling off in shipments East and West is due chiefly to the scarcity of cars coupled with some petty strikes.

The French Government will not recognize Greenwich, and have resolved to fix one uniform time for the whole of the country. This will be "Paris time," which for the future will be adopted in railway stations and public places all over France, and it is to be called *l'Heure Nationale*. On the frontiers, however, both the national hour and the foreign hour will be shown by the official clocks. At the present moment three different systems of marking the time are in vogue in France. The new system will come into operation at the opening of the Universal Exhibition.

The Iron Age

New York, Thursday, September 20, 1888.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, JR., - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

Protection and Progress—III.

The unprecedented economic disturbances of the last 20 years which, as Mr. Wells has so well shown, have furnished by all odds the greatest industrial force of the civilized world during that period, have been, as he also proves, the result of scientific inventions and applications of natural forces and resources. In other words, they are incidents of a progress which has become, in these latter days, so much more rapid and wide than ever before as to constitute a new element in economical science. The difference in degree practically amounts to a difference in kind. One consequence of this fact is the invalidation of many of the economic formulas worked out from data in which the element of progress was but slightly considered, if considered at all. The chance, for instance, that capital invested in buildings, ships, plant and all the machinery of trade, would be destroyed prematurely by world-wide changes due to new discoveries or improvements has not usually been taken into consideration in estimating the inducements and rewards of such investments.

Mr. Wells tells us that after the wholesale destruction of values in sailing vessels, occasioned by the opening of the Suez Canal, three successive fleets of steamers were built within a few years to navigate that canal, each new type rendering comparatively worthless all its predecessors, though these were still nearly new. The replacement of the paddle by the screw in ocean navigation was a similar process, but far less rapid, and hence incidentally less disastrous. The feature of the progress of to-day which we desire to emphasize is its instantaneous and catastrophic character. The actions and reactions of the "laws of trade" have been studied and formulated without much regard to this factor of time. A favorite figure with economists has been that of a fluid "seeking its level," and their favorite maxim has been, "Let it alone, to find its level." The picture in their minds has been that of a pond, augmented by some gentle wave at one side, adjusting itself under the influence of gravity. They have not realized that tempests and tidal waves and headlong torrents are also cases of a fluid "seeking its level." Or, to change the figure slightly, they have calculated the effect of this or that way of steering in a slow current and safe channel, and concluded that the best course is to drift. But they have not realized that the regimen of the stream has changed, and that violent freshets are continually changing even the channel.

Now, it is the function of tariff protection, not hitherto sufficiently recognized, to modify and retard the incidental disasters of industrial progress As we have already shown, protection mightily stimulates the international exchange of ideas, which is the chief element in this progress. We have now to add that while this helps to make a new improvement known at once throughout the civilized world, it tends, at the same time, to break the disastrous force of the consequent changes or revolutions of industry. American manufacturers, for example, get the knowledge of great improvements in manufacture, not in the form of a sudden ruinous competition, the means of which are perhaps secret to them, but in the form of descriptions, which may guide them in improving their own methods. This gives time for the inevitable change which home competition is certain to bring about. An extreme instance of protection—going much further than it would be (for reasons not now under consideration) advisable to go in general—is furnished by our navigation laws, which are absolutely prohibitory. But, for the point we are now presenting, this extreme case affords a striking illustration. For we owe it to our navigation laws that American ship-owners did not share in the ruin which the completion of the Suez Canal brought upon English ship-owners. The direct import of that tidal wave did not reach our shores at all. The innumerable vessels thrown out of use by that event were not permitted to work sudden disaster to our coasting trade.

To sum up our line of thought, progress is not only inevitable, but beneficial. Ultimately (and, indeed, sooner than pessimists believe), it benefits all classes—the manual laborers most of all. But it is attended with great disturbance and friction, and hence with much incidental distress and loss. It is the part of statesmanship to reduce these as much as possible and not wholly to sacrifice the present to the future. Violent changes in industry are to be deprecated, even when they are in the nature of ultimate benefits. The change may be a good thing; the suddenness and violence of it are not good. Stability is a blessing, too. And a wise protective tariff may so operate as to regulate, while it actually stimulates, the forces of progress.

The coming winter promises to be a busy season with shipbuilders on the lakes. The summer has been fairly profitable for the vessel owners, whose lines have been well employed at good rates, and the increasing iron ore shipments now cause them to feel very hopeful of the prospects for next year. Under such conditions they will not hesitate to replace old vessels with better ones, and to add new vessels to existing lines. Some contracts have already been placed with shipbuilders and more are under negotiation. The use of iron and steel in lake shipbuilding increases every year, and some of the wooden shipyards in Michigan will soon add plants for the construction of iron and steel vessels, recognizing the tendency of the times. The steel vessels now in use on the lakes have won for themselves a high reputation for speed and endurance. A short time since one of them was driven by a storm on the Government breakwater outside of the harbor of Chicago, and the receding waves left it with almost half its length projecting in the air. The officers expected it to go to pieces under such a severe strain, but tugs were secured from Chicago as quickly as possible which pulled it back into the water. It was then dry-docked and found to be injured but slightly. The quality of the work turned out by American shipbuilders both on the lakes and on the seaboard is most excellent, and notwithstanding the gibes of callow statesmen, we are making progress in this branch of industry every year which will count heavily in our favor whenever the conditions are propitious for our entrance into the race for supremacy on the ocean.

The Friction of Leather Collars in Hydraulic Presses.

Since the time of the experiments conducted by Mr. John Hick, more than 20 years ago, nothing that we know of has been done in the line of investigating the friction of cup-leathers and other packing in hydraulic presses, except what has quite recently been accomplished by Mr. J. E. Tuit, Assoc. Mem. Inst. C. E., and recorded a short time since in *Engineering*. Trustworthy information as to the ratio between the gross pressure exerted by the liquid contained in a hydraulic press and the useful pressure transmitted by its piston was, in fact, entirely lacking previous to Mr. Hick's experiments, the only published figures probably being those given by Professor Rankine in his admirable treatise on "The Steam Engine." These, however, place the friction between a plunger and its collar at about one-tenth of the total effort of the water on the plunger, or somewhere between one-ninth and one-eleventh, values which not only seemed much too high, but which evidently could not be applied to plungers of varying diameters without the chance of introducing serious errors, the diameters obviously having a direct bearing on the results. It was probable, moreover, that the friction of a properly designed and constructed cup-leather packing was much less than in the case of any form of packing of which the tightness and coefficient of friction depended upon the behavior of that uncontrollable variable, a man with a monkey-wrench. Mr. Hick's investigations appeared to give ample proof of all this, and his results are even now, though not of undisputed accuracy, as it would seem, entitled to careful consideration, having been arrived at by a series of tests in which neither trouble nor expense was spared to insure reliability. We cannot undertake to supply here in detail the trial figures which he obtained, but annex a table which gives, in a compact and convenient form, the frictional resistance in percentage of the total hydraulic pressure for rams ranging from 2 inches to 20 inches in diameter. It was within these limits to size that the experiments were made.

Dia. of ram inches.	Friction per cent.	Dia. of ram inches.	Friction, per cent.
2	2.00	12	0.33
3	1.33	13	0.30
4	1.00	14	0.28
5	0.80	15	0.26
6	0.66	16	0.25
7	0.57	17	0.23
8	0.50	18	0.22
9	0.44	19	0.21
10	0.40	20	0.20
11	0.38		

The great reduction in these friction values as compared with Professor Rankine's estimates is at once apparent, and is

quite striking. It will be noticed also in the table that the coefficient of friction diminishes rapidly as the diameter of the ram increases, a circumstance which Professor Rankine seems to have ignored entirely in his investigations, but which exerts a most important influence in arriving at the efficiency of a press.

It is interesting now to compare with these figures the results obtained by Mr. Tuit as noted above. Mr. Tuit experimented with six different forms of presses, the plungers ranging from 4 to 14 3/16 in. in diameter. Two of the presses were furnished with cup-leathers both at the top of the cylinder and lower end of the plunger; two others had cup-leathers at the lower end of the plunger only; the fifth had a cup-leather in the plunger, and a stuffing-box with packing fitted to the cylinder, while in the sixth there was no cup-leather, a stuffing-box with packing alone being employed. The presses were marked respectively D, E, A, B, C and F. In some of the trials a strip of iron was introduced on one side between the upper surface of the ram and the plate against which it was pressing, thus representing a load not coinciding with the axis of the ram. From the table of results obtained, we extract the following figures:

Mark on ram.	Diameter of ram.	Area of ram.	Weight raised.	Pressure required per square inch, ram in ordinary working condition (good bearing).*	Loss, per cent.	Pressure required per square inch, ram in ordinary working condition (one-sided bearing).	Loss, per cent.	Pressure required per square inch after new cup-leather and being regreased (good bearing).	Loss, per cent.	Remarks.
	in.	sq. in.	tons.	cwt.		cwt.		cwt.		
A	4 1-64	12.66	6	....	....	10½	9.8	10¼	7.6	Cleaned, regreased, and cup leather renewed before being tested.
			18	....	....	30½	6.8	30¼	6.0	
			30	....	....	51	7.1	50¾	5.7	
B	4	12.56	6	10⅝	10.0	11	13.1	10⅛	9.0	Tested before and after renewal of cup-leather.
			18	31⅛	7.9	32	10.4	30⅝	6.4	
			30	51¼	6.8	52	8.1	50⅝	5.6	
				lb.		lb.				
C	3¼	8.29	2	600	9.9	630	14.2	....	....	Ram comparatively new. Packing in place of cup-leather.
			4	1210	10.6	1230	12.1	....	....	
			5	1500	9.9	1530	11.7	....	....	
				cwt.		cwt.		cwt.		
D	8 7-16	55.91	10	4	10.6	4	10.6	4	10.6	Tested before and after renewal of cup-leathers. Those removed, however, were in good condition.
			30	11⅝	7.7	12	10.6	11⅝	7.7	
			60	23	6.7	23¾	10.1	23	6.7	
				lb.		lb.		lb.		
E	13⅝	145.8	15	284	18.8	300	23.2	284	18.8	Ditto. Ditto.
			45	760	9.0	790	12.5	760	9.0	
			60	1000	7.7	1030	10.5	1000	7.7	
F	14 3-16	158.09	15	240	11.4	250	15.0	....	....	This ram is used for straightening purposes as a hydraulic bear; it is fixed in a horizontal position. It was formerly fitted with cup-leathers, but these seldom lasting more than one week, were replaced by packing, which has not been renewed for twelve months. The bear has been in constant use night and day.
			45	670	4.8	690	7.6	....	....	
			60	880	3.4	920	7.6	....	....	

* By "good bearing" it is meant that the weight raised was equally distributed over the upper surface of the ram.

The remarkable difference between these results and those of Mr. Hick needs not be specially pointed out. The discrepancy is so great that it attracts attention at once, the coefficients in several cases closely approaching Professor Rankine's, while in others they even go beyond. Mr. Tuit presents the figures simply as he obtained them, without comment or attempt to explain why they should point to such extraordinarily high percentages of friction; and, indeed, it is difficult to offer a satisfactory explanation unless we attribute the variation in the results in a great measure to personal equation. With even an extremely liberal allowance for this, however, the results should show better agreement. It is not the varying length of the leather touching the ram which can be held accountable, since this has been found to exert no appreciable influence, and as to the registering apparatus for the pressures, we are assured in both cases that it was carefully adjusted and tested, thus leaving no room for doubt on this score. As matters now stand, therefore, additional experiments are highly desirable—in fact, necessary, to set at rest the doubts and speculations as to what the friction of leathers and packing in hydraulic presses actually amounts to. The approximate figures which are all that is now available, are entirely too vague to serve any useful purpose, and should not be allowed to remain as the only data upon which engineers must base their calculations.

Railway Associations.

Some rather sensational articles and telegrams have lately appeared in the daily papers prophesying the early breaking up of the different traffic associations among our railroads. It is probable that the danger of any complete overthrow of these associations has been exaggerated, but there is enough truth in the report to cause anxiety in railroad circles. It is an open secret that great dissatisfaction exists with the large expense incurred for their support—an expense which certain members declare to be out of any proportion to the small amount of good the present form of combination is capable of doing. This, however, is not the opinion of other and more conservative railroad managers. The expenses of those organizations, as divided among all their members, amount in each case to but little more than the salary of a capable officer, while the statistics alone, as well as the opportunities offered for exchange and discussion of views, are benefits worth indirectly all they cost. It is to be hoped that these associations will not be abandoned by the railroad managers, if for no other reason than because of the uniformity of action and comparative steadiness of rates, which they help to secure to the shipping public. It is a truth in political economy that even high taxation is not as bad as unequal taxation, and the same applies to transportation. When we consider how important a part of the value of our products and manufactures is the charge of the carriers, and how great the confusion in our industrial system would be if these charges showed wide fluctations from day to day or week to week, we see how valuable is uniformity of tariffs. But such steadiness in the nature of things can only be secured by some sort of an agreement between roads which compete for the traffic between the same points. A cast-iron pool controlling absolutely the rates in a given territory is an extreme which the Interstate law condemns; but surely a haphazard style of tariff and rate making, where one road proceeds upon a theory entirely different from its rival, is the other and equally bad extreme. In our day, among the members of a given trade or manufacture, the necessity of some concert of action is recognized as never before in the history of commerce, and, leaving the so-called "trusts" out of view, there is still a large field for legitimate organization, for the collection of trade statistics, for the reformation of trade abuses and other worthy objects, which no healthy public sentiment will condemn. What, then, we demand for ourselves we should freely concede to our railroad friends, whose position as regards the need of such organization is even more difficult than our own.

We are still in the experimental stage as regards the pooling question. The strong roads favor its prohibition. They believe in the survival of the fittest because they believe that they are the fittest, but this does not cover the whole question. Chairman Blanchard's article upon the subject in the August *Forum* marks a distinct advance in the discussion of the problem. Mr. Blanchard advocates a restoration of the pooling privilege to the railroads, but under the minute and detailed oversight of the Interstate Commission. Possibly the author in writing the article had the precarious condition of the present associations in mind, and knowing the necessity of some organization, was preparing the public mind for a pooling plan under changed conditions. He asks: "If 50 cents is a reasonable rate, what objection can there be to its division among several competing lines?" None, of course, but that "if" involves the whole question. How shall we determine whether 50 cents is a reasonable rate? Only in one of two ways: Either by competition, as in mercantile affairs, or by some strong combination subject to the absolute right of some controlling body to alter rates at pleasure. The former is the principle of the Act prohibiting pooling, the latter is the plan proposed by the chairman of the Central Traffic Association. The latter plan involves also in time the close control of transportation by

some governmental machinery, and would also open such a body to the cry of "confiscation of private property" should they declare a reduction of rates in opposition to railroad managers—in fine, a step toward the bureaucratic system of Europe. Meanwhile, the plan of voluntary association is proving as incapable of producing all the desired results among railroads as it has among tradesmen. If we concede that some form of organization among carriers is essential to the best interests not only of railroads, but of the mercantile public, it remains still in doubt what the best form of that organization shall prove to be.

Our Trade with Hayti.

Like most other coffee-producing countries, our domestic export trade with Hayti has received a great impulse from the appreciation of the article, and as that country usually takes half of what it imports from the United States, it is to be hoped that the revolutionary change of government which occurred last month may not be followed by a disastrous renewal of civil strife. Revolutions have been more frequent in Hayti than in any Spanish-American country, hence the administration of President Salomon, lasting nine years as it did, and being in every respect successful, was an exception to the rule. A vigorous attempt to upset him was, it is true, made after he had been in power four years; civil warfare shook the Black Republic to its very foundations during many months in succession, but President Salomon put it down with an iron hand. The next attempt at revolution was early in June last; it was nipped in the bud by exiling the alleged ringleaders, Generals Manigat and Légitime.

Generally a Haytian revolution begins with a big incendiary fire at the capital, Port-au-Prince. Two such fires were kindled on July 4 and July 7, and an enormous amount of property became the prey of the flames, not a small portion belonging to foreigners. Two incendiaries caught in the act were shot, and for the moment all was quiet again, when early in August General Télémaque marched upon the capital at the head of an armed force, but was defeated at Plaisance by the Government troops under General Jumot on August 10. In spite of this check the revolution prevailed, and at Port-au-Prince General Boisrond-Canal tried twice, but in vain, to form a provisional Government. General Légitime was then called back from his exile in Jamaica, while President Salomon received an intimation to leave the country, which he did, boarding the British man-of-war Canada. He has gone to Paris, where he will stay permanently. Aged 75, as he is, and tired of politics, his career may be considered closed. During his nine years of rule President Salomon has achieved a great deal for the good of his country. He raised the credit of Hayti abroad, regulated and recognized the foreign loans, paid indemnities to all foreigners who had suffered from the rebellion in 1883, floated at Paris a new loan for 7,500,000 francs and settled with our Government the $120,000 Van Bokkelen claim. President Salomon caused to be established more than 300 schools, built a palace for the Government and for both Houses of Congress, established a bank, opened several roads and was just negotiating a contract for a railroad between Port-au-Prince and Cape Hayti, when he was compelled to leave. After the revolutionary troubles of 1883 President Salomon added to the navy two effective men-of-war, one a steel ram, under the command of Commodore Mason Cooper, formerly an officer in the United States navy. Hayti has now altogether five armed vessels, with a total armament of 30 guns, while the army has a strength of 6828 rank and file.

The outlays in 1886 were $6,412,956, squared by an income equal in amount. The budget for 1887 fixed the outlay at $4,066,236. Public indebtedness consists of a foreign debt of $5,820,000, and a home debt of $9,180,000. The circulating medium is the Haytian silver dollar, coined since 1881, of an intrinsic value of 80 cents American gold. Much has been done during President Salomon's rule, to improve the quality of Haytian coffee and prepare the same more intelligently for export; large establishments have been created for sorting and properly drying it, and during the nine years of his administration the export has from 40,000,000 pounds increased to 75,000,000 pounds.

There are two parties in Hayti—the negro and the mulatto party—the former being numerically the stronger, the latter representing the younger, more restless element. While Salomon understood how to rule them both, the personal ambition of the generals who now aspire to seize power may prepare troublesome times. In 1886 the import into Hayti amounted to $4,965,256, while the export reached $7,555,996. Our share in the import was 52 per cent., in the export 14; France's proportion was 21 and 66 respectively; England's, 15 and 5; Germany's, 9 and 8; Belgium's, 3 and 3, and that of other countries, 3 and 4. The goods exported in the same year were: Coffee, 58,075,733 pounds; cocoa, 3,939,445 pounds; wool, 2,037,653 pounds; hides, 436,579; orange peel, 461,768; sugar, 289,354; cotton seed, 34,536; tortoise shell, 906; wax, 3619; honey, 18,001 gallons; cigars, 17,000,000; logwood, 282,620,852 yards, and besides cotton, fustic, mahogany and old copper The number of vessels entered was 684 with an aggregate tonnage of 668,003 at the four leading ports: Cape Hayti, Port-au-Prince, Gonaives and Aux Cayes, 427 thereof being steamers.

American trade during the last two calendar years was as follows:

	Import.	Domestic export.
1887	$1,884,803	$3,762,772
1886	2,309,989	2,702,114
Increase of export		1,060,658
		or 39 per cent.

A cablegram received at Washington on September 6 from Captain Chester, commanding the United States steamer Galena, arrived at Kingston, Jamaica, which was ordered to Port-au-Prince for the protection of American interests said to be imperilled by the recent revolution, stated that the troubles in Hayti were at an end for the present. It is to be hoped they may continue so.

A case of railroad discrimination recently ventilated in Kansas affords in itself strong justification for the creation of commissioners with power to correct abuses. It appears that the Missouri Pacific Railway Company handle a large tonnage of coal from the mines of Osage County, Kan. and also from the mines in the vicinity of Rich Hill, Missouri. This coal they distribute among consumers scattered throughout a vast territory in Kansas. The coal operators of Osage County complained to the Kansas Railroad Commissioners that on July 20th the company raised the coal tariff from 10 to 30 per cent. higher than the old rates to all points which these operators could reach. It was charged that this was a willful discrimination against the Osage County operators in the interest of the Rich Hill mines, which are for the most part owned or controlled by the railroad company, and whose product is marketed in the same territory. Comparative tables were presented, by which it was shown that on a carriage of 109 miles the Osage County coal paid a freight rate of $2 per ton, while the Rich Hill coal paid but $1.10, which was a clear discrimination in favor of the latter of 90 cents per ton. Under such a tariff is was asserted that the Osage County operators would be obliged to discontinue business. After a thorough investigation, the railroad commissioners decided on the 13th inst. that the company had violated the laws of the State of Kansas, and that they should be directed to reduce the rates on Osage County coal to conform with those on the Rich Hill coal. Practices of this kind deprive the railroad companies of the sympathy which they desire to cultivate among the general public. They complain that they are unfairly treated by the railroad commissioners of several Western States, and that unremunerative rates are arbitrarily fixed by such commissioners, causing heavy reductions in earnings, making the payment of dividends to stockholders impossible, and seriously depreciating the value of railroad property. It is unfortunate for those who have their money invested in railroad stocks and bonds that the managers of their property should act in a manner calculated to excite the hostility of the general public toward railroad corporations. Until such managers learn to treat all interests fairly and honorably this friction will continue, and, in the meantime, owners of railroad stocks and bonds must suffer the unfortunate consequences of the folly of those who represent them.

The outcome of the proposals recently invited by the Secretary of the Navy for tubulous, sectional or coil boilers for one of the armored coast defense vessels will, no doubt, be closely watched, being of special interest because of the almost universally unfavorable experience with boilers of this class for shipboard duty. The Belleville boilers in the French Navy are, we believe, at the present time the only notable examples of such boilers afloat with which anything like satisfactory work has been done, and even so far as these are concerned it is still a fact that not a single ship of the commercial marine has been fitted up with them. In this country water-tube boilers have been tried for marine purposes in a number of instances, always with unsatisfactory results, though it may be said, with some reason, that their poor performance and early abandonment were more largely due to incorrect design and construction than to error in principle and general lack of efficiency. As a matter of fact, some of the early

boilers of this class placed aboard ship were condemned even before they were fired, and their failure on trial was to be expected. There were several reasons why they should fail. The tubes were connected rigidly and were placed nearly horizontally, no provisions being made either for expansion and contraction or for circulation. In the absence of equalizing pipes, moreover, connecting the steam ends of the several sections, the feed being supplied from a common water-pipe, some parts were liable to become empty while others were full of water. It is not strange, therefore, that the boilers did not last. They were repaired a number of times, and some changes were made, but they were finally condemned and replaced by others. Some which had been put in place were again taken out without ever having been fired. One of the ships in the United States Government service having a water-tube boiler built by Messrs. Babcock & Wilcox some years ago performed very satisfactorily—an exception, however, to what appears to have been a general rule. Added to the difficulties which resulted from the imperfect design of the boilers, were those of excessive weight and the great amount of space occupied by them, in themselves almost sufficient to cause their removal even had they been successful in other respects. Since the time of which we speak important advances, it is true, have been made in the building of water-tube boilers, but their special fitness for marine duty has by no means been yet established. In point of complexity, large size and heavy weight for given powers, they are still objectionable as compared with accepted types, though, on the other hand, they have redeeming features, such as safety, the possibility of longer life, efficiency and others which are not to be ignored. From whatever point considered, however, the tests which the Navy Department proposes to make with the boilers submitted for trial promise to yield data alike interesting and valuable. At the same time we doubt very much whether the results will be such as to warrant the adoption of any one of the designs for the purpose in question.

Steel Ties in Burmah.—According to *Indian Engineering*, steel ties, after having undergone a careful test for the past four years, on different parts of the line, are now displacing the teak railroad ties hitherto used on the open line of the State Railway. Teak so far has been found the best timber yet used for this purpose, and has been found to last as long as 10 years; but the use of steel ties economizes the expense of spikes, and is reported to last from 40 to 50 years. The low price now ruling has been a great inducement not only of substituting steel ties, but also a large quantity of steel rails is now being used in this Province.

Carter H. Fitz Hugh, formerly with Goulds & Austin, Chicago, has severed his connection with that firm to accept a position with Joseph T. Ryerson & Son, iron and steel merchants, of the same city. Mr. Fitz Hugh is well and favorably known in the Chicago iron and steel trade.

Mr. F. R. Phillips, 407 Walnut street, reports a large and continually increasing demand for Post's "Zero." Headquarters for "Zero metal" for Eastern Pennsylvania, New Jersey and Delaware is at 407 Walnut street, Philadelphia.

Copper Prices and Electrical Progress.

One of the principal claims in behalf of present high prices of copper put forward by those who have engineered the rise of the past year is that the consumption of the metal has become very much heavier by the introduction of electricity for a large variety of purposes. That the demand for copper wire for telegraph and telephone lines, for dynamos, motors, lightning and the transmission of power has very greatly increased cannot be doubted. Even the most careless observer of progress during the past few years must have been struck with that fact. But when the point is reached of securing some numerical expression of this new source of consumption—when the effort is made to ascertain, even roughly, how many pounds of the metal go annually into these new channels, then everything fails us. Figures could be reached only by an elaborate investigation freely and generally aided by those who draw copper wire. The quantity used in this country may be 20,000,000 pounds, and may possibly be considerably more, though it is not likely to be less. We have been unable to secure data from electrical companies which might throw some light on the rate at which this new business is developing so far as the quantity of metal used is concerned.

Some idea of the development in this country in a single year may be obtained from the figures submitted in President Duncan's address before the National Electric Light Association. In February last there were 4000 isolated electric lighting plants and central stations in the United States, which operated 175,000 arc lights and 1,750,080 incandescence lights. Since then there have been added 1361 new isolated plants and stations, operating 35,201 arc lights and 392,944 incandescence lights. A complete record is kept of these and shows that now there are 3351 plants and stations, operating every night 192,500 arc and 1,925,000 incandescence lights. There are also 459,495 horse-power of steam engines devoted to electric lighting. The capital invested in the electric lighting companies during the past half year has been increased to the extent of $42,210,100. In February there were in this country 34 electric railways, with 138 miles of track, operating 223 motor cars, and utilizing 4180 horse-power for stationary engines. Forty-nine new roads are now being built, having a total of 189 miles of track, and to use 244 motor cars. There are also several motor factories, some of them employing as many as 1200 men.

Progressing with such leaps and bounds, it is not surprising that those who have undertaken to control the most important raw material entering in the construction of apparatus and lines should be sanguine concerning the aid which the new uses of electricity are liable to give them. Indirectly the call for copper from a new source with its promise of rapid increase is a subject of great interest to consumers of rolled and cast brass and copper in all its forms. In view of their requirements alone, the enormous production has already been stimulated by prices undoubtedly above any possible legitimate values. The question naturally arises, will the demand for electrical purposes increase so rapidly and so largely that it will enable the speculators to exact tribute not alone from every one who builds, operates, or uses a telephone, the electric light or plant for electric transmission of power or conveyance of goods or passengers, but also from every consumer of copper or brass? Has the high price of the metal already had the tendency to obstruct or to check the progress of electricity?

On the latter point we are in a position to place before the readers of *The Iron Age* the following letters from a number of companies who have had a prominent part in the development of the past few years.

A leading company in introducing electric railroads and motors write:

In our business the consumption of copper has quite largely increased in the last two years. We make a much larger number of motors, requiring a proportionately greater amount of copper wire, and we also use a large amount in overhead wires in street railway work—this part of the consumption being quite new. The average cost of the copper in any machine varies quite widely with the size of the wire used, and the effect of the recent rise in price of copper ingots varies in the same way, being small if the wire used is small, and being comparatively large if the wire used is large. The smaller wire requiring a considerable amount of labor to give it its market value, the price of the ingot has a relatively less effect. Roughly, we use 50 pounds of copper for every $100 worth of work on our motors.

A concern manufacturing dynamos and interested in electric lighting and the distribution of power states:

The growth of electricity has considerably augmented the demand for copper, as it very largely enters into the cost and erection of a plant; and while we do not believe that the increased price has prevented the introduction of electricity, for the reason that the people are becoming educated to its use, and popular sentiment demands it, still the increased cost affects the manufacturers very materially, the competition in electric lighting apparatus being so active that prices cannot be made to compare with the increased cost of material, of which copper is a large element.

A producer of motors puts himself on record as follows:

We have no statistics of sufficient value for publication referring to the effect of the rise in copper upon the demand for our goods. We can briefly state, however, that we pay for copper for each machine nearly one-half the total cost of the machine. The business is yet so young that the motors have not established for themselves an accepted value, but their market price is largely governed by prices charged by some new company who are endeavoring to get the field. It will be some years yet, probably, before the market will be so settled that change in the price of the raw material will directly affect the selling price, and consequently the demand for the finished machine. The rise in copper has certainly added considerably to the cost of our plant and equipment.

A firm of large contractors holds the following opinion:

Inasmuch as a very large proportion of expense in electrical construction is for copper, the rise in price, which is the result of the operations of the syndicate, has, in our opinion, materially affected the introduction of electricity in plants of large size. We cannot answer your question as to what extent the cost of metal enters into the total cost of equipment, inasmuch as it depends so largely upon the character of the work. In some cases much the greater part of the cost is for labor, and in other cases a very large part of the cost is for copper.

From the Eastern States a concern making lamps and wires expresses the following opinion:

We have no doubt that the growth in the consumption of copper for electrical purposes has seriously influenced the demand and aided in making possible the success of the copper syndicate. Unquestionably the rise in copper has materially added to the cost of electric light plants. For instance, making estimates to-day for a local plant in a town of 15,000 inhabitants, our estimate for the wire for conductors is $17,500. This estimate is 25 per cent. higher than it would be if copper were at the old price of 14½ cents. We do not believe the increase in the price has seriously affected adversely the introduction of electricity for light and power purposes. Our own business has increased threefold in the past year, and we doubt whether the increase would have been any larger had copper remained at the old price.

A very well-known company who are builders of electric lighting plants and of motors reply to our questions:

Two years ago we were not purchasing any copper, but during that time we have placed 3000 arc lamps and some incandescents. This,

of course, is a very small part of the business that has been done. The rise in copper has added materially to the cost of plant and equipment. The cost of copper is about 25 per cent. in our system as compared to the cost of other material and labor. In systems where they use many pounds of copper wire more to produce the same result the proportion would be greater. But if you consider the copper in line wire that it requires to install a plant the cost would be much more than the cost of labor and other material. We do not know that the increased price of copper has affected the introduction of electricity for a variety of purposes, but it has affected the pocket of the manufacturer.

An important Western company reports to us as follows:

With the constantly extending use of the electric light and electric transmission of power, it is obvious that the percentage of copper used in electricity has been and is increasing rapidly. We buy tons of copper now where we bought hundreds of pounds a few years ago, but it is noticeable that during all the time of this rapidly increasing consumption of copper the price of copper did not advance, but, on the contrary, fell to the lowest point it has seen. Since the recent large advance in price, it is our impression that the use of copper in electrical enterprises has diminished instead of increasing. The advance in the price of copper adds very materially to the cost of electric light and electric power plants. The cost of copper in a plant is perhaps one-third to one-half the entire cost of the plant, and the largely increased cost of an electric light or electric power equipment due to the advance in the price of copper has considerable influence in checking the introduction of plants.

The president of one of the great electric light companies writes:

The growth in the consumption of copper for electrical purposes has, in our judgment, seriously influenced the demand. We have been in business about 15 years and we use now about $150,000 worth of copper in various forms each year, whereas 10 years ago our use of it was not even one-fifth as large. The rise in the price of copper has materially added to the cost of the electrical-apparatus manufacturing business. The cost of copper in our largest size machines, which are the ones we sell the most of, is a large part of the cost of the entire machine. We do not know that the increased price of copper has adversely affected the introduction of electricity, because, so far as we are aware, there has been no increase in the price of electrical apparatus to correspond with the increased cost of copper. We h ve always understood from the manufacturers of copper and brass materials that the electric light business was a very important element in their business, and that the amount of copper used in the aggregate in the entire electric light industry was very great indeed and constantly increasing. We believe there can be no question regarding this. Another point to be considered in this matter is the fact that the finest quality of copper is required for a very large part of this work and this grade of copper is apparently produced only by the Calumet and Hecla Mining Company, Calumet, Mich., and the other mines in that part of the country. We still believe, however, that the present price of copper is wholly artificial; that the facts regarding the increased demand, which we have admitted, do not justify any such increase in the price; that copper can be produced by existing mines in this country at a very large profit if it can be sold at 12 cents per pound, and we believe that if the matter should rest purely, as it should do, on the basis of supply and demand, the price would never go above 12 cents per pound.

An Eastern company handling electrical supplies says:

In our judgment the growth in consumption of copper for electrical purposes has to a great extent influenced the demand for that metal. Copper is one of the important factors in the construction of an electric light plant. The dullness of the past few months in the electrical field has been wholly due to the high price of copper. Now that the price has become fixed and there is no prospect for cheaper copper for some time to come business is going forward as usual, but not to that extent that it would with copper at lower prices.

The president of a prominent electrical company of New York writes:

I have not the time nor the information to properly answer your letter. Of course the advance in the price of copper affects to a certain extent the electrical business, not especially because of the quantity used in the construction of electrical apparatus, but principally as connected with the installation of the plant—that is, the wiring.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., September 18, 1888.

The Senate Sub-Committee on Finance are still at work giving hearings to industries, and are not disposed to cut them short. Senator Hiscock, when the subject of terminating this branch of their labors was broached a few days ago, said that he was opposed to any action in that direction; that he proposed to give every industry in the State he represented a chance to be heard wherever they had expressed such a desire. Senator Allison takes the same view, and in that he is sustained not only by his colleagues of the full committee but in the Senate.

It has been ascertained that the most important feature of the metal schedule of the Senate tariff bill will be the unification of iron and steel on the basis of uniform duties on imports for both revenue and protection. It is stated by members of the committee that the change in the system of regulating duties on manufactures in iron and steel will have the effect on a number of manufactures of steel of practically raising the duties. This is a very radical move on the part of the committee, but they claim that steel within the past 10 or 15 years has been substituted for iron in so many branches of metallurgical industry that they should be classified together. They claim that the revision might go further by making steel the basis upon which to regulate the duties on iron. This feature of the bill, when submitted to the Senate, will undoubtedly lead to a spirited and protracted debate, and will give the press generally, and technical papers in particular, a fruitful and fresh theme for comment and discussion.

The Democratic wing of the Senate Committee are in a bad way for some one to write their minority report on the Senate Tariff bill. Senator Voorhees, the senior on the committee, has given the subject no attention whatever, and does not desire to figureso prominently just now in the heat of a campaign against the Senate Protective bill, nor to put himself on record quite so notoriously in favor of the Mills bill as an exponent of Democratic doctrine. Senator Beck is ill at Fortress Monroe and will not be able to resume his place in the Senate earlier than December, nor is he in condition to prepare the minority report, which was expected of him. Senator Harris, the other member of the Sub-Committee, is such an ultra pronounced free trader that a minority report by him would be an indorsement and an emphasizing of the Republican charge that the Mills bill is a free trade measure. How this question will be disposed of is a puzzling problem to the Democrats of the committee and the Senate.

Senator Allison says that, taking the experience of the committee as a guide, he has not found six prominent woolen manufacturers in the United States, and not over three in Rhode Island, the seat of that branch of textile manufacture, who are in favor of free wool.

The stockholders of the Redstone Coal, Oil and Coke Company held a meeting recently at the Monongahela House, Pittsburgh, at which the future plans and prospects of the company were discussed. Jacob E. Ridgway, of Philadelphia, president of the company, presided. Dr. W. R. Brown, also of Philadelphia, is the only other member of the company outside of Pittsburgh men. It was decided to proceed at once to develop their property in Fayette county. Their lands lie in Redstone township, several miles east of Brownsville, and the works will be located near Redstone Village. There are extensive soft coal fields in the vicinity, but owing to lack of transportation the land has never been developed. Some time ago the Pittsburgh, Virginia and Charleston road surveyed a single track branch road from West Brownsville. On the line of the road the works will be located. Fifty coke ovens will be built at once. The plant will be increased as soon as the business warrants it. A coal shaft 265 feet will be sunk. The coal is right under the site of the coke ovens. The capacity of the latter will be about 2000 tons. A number of tenement houses will be built for the accommodation of the men sinking the shaft, and after the latter is completed the houses for the occupancy of the cokers will be put up.

We take the following from the Marquette, Mich., *Mining Journal*, of the 8th inst.: Shipments of iron ore from the mines of the Lake Superior region for the week covered by our shipping report aggregated 198,235 gross tons, to which total this port contributed 52,957 tons, Escanaba, 70,499 tons; St. Ignace, 3426 tons; Ashland, Wis., 53,315 tons, and Two Harbors, Minn., 11,038 tons. The total for the season is 2,806,173 tons, this being 214,783 tons less than the quantity that had been sent to market by water at the corresponding date last year. The shipments by ranges to date are as follows: Marquette range, 1,113,139 tons; Gogebic range, 810,055 tons; Menominee range, 661,662 tons; Vermillion range, 221,353 tons. The following table shows the shipments by port up to date this season in comparison with the shipments for the corresponding portions of the two preceding years:

Port.	1888.	1887.	1886.
Marquette.....	508,437	557,309	615,022
Escanaba.....	1,312,709	1,383,419	1,006,899
St. Ignace.....	70,526	63,467	45,527
Ashland, Wis..	689,148	759,850	465,503
Two Harbors, Minn.....	221,353	256,911	211,954
Total.....	2,806,173	3,020,956	2,344,907

Railroad growth in the United States, as shown by the examination of statistics, corresponds very nearly to the actual demands of business. Comparing the census of 1880 with the latest report of railway operations it appears that the tons of freight transported 1 mile during the census year numbered 32,348 millions, and last year 60,061 millions, according to Mr. Poor. A little division brings to light the fact that the average was about 368,000 tons 1 mile for every mile of railroad in 1880, but it was 438,000 tons 1 mile for every mile of railway in 1887. The increase of 70,000 tons per mile of road operated is not quite 20 per cent., but, in spite of the increase in mileage, which has been extraordinary, the increase in tonnage transported has been nearly a fifth greater. It becomes evident that there is now more business for every mile of road in operation than there was eight years ago, although the mileage, meanwhile, has increased more than half. On the old roads traffic increases faster than population.

Three cruisers for the Spanish navy are to be built in Spain, by a native firm, who intend, with the assistance of a North of England shipbuilding company, to establish works in that country.

German steamers are getting a strong position in the coastwise trade of Japan, in this respect placing those of England at a disadvantage. While British tonnage doubled at some of the leading ports since the year 1880, that of Germany increased many fold. It is surmised that a grand opening exists for the introduction of American steamers of from 600 to 1500 tons carrying capacity and not under 9 knots per hour

THE WEEK.

A large gang of men at work in the Hoosac Tunnel were overcome by coal gas from a passing locomotive, owing to a condition of the atmosphere peculiarly unfavorable to free ventilation, and 18 were rescued in an unconscious state. Two of them will probably die.

Five employees of a leading grocery firm in this city, shipping clerk, carmen and others, who entered into a conspiracy to rob the firm, were sentenced by the recorder to five years in the State prison.

The new machinery of the steamer City of New York is not easily persuaded to come up to the requirements for high speed. The delay experienced by her on the first trip out from Liverpool was scarcely less aggravating on her second trip just completed. Some of the valves of the main circulating pumps caused a delay off Queenstown, and later the same difficulty occurred again, causing both the port and starboard engines to slow down or stop altogether, and, finally, when the ship was off Newfoundland, the valves gave out, causing some anxiety, if not alarm. The climax was not reached, however, until the engines remained stationary for two hours, on account of trouble with one of the piston-rods. The entire voyage occupied eight days and 13 hours.

Wire gauze for baled cotton is recommended as a covering equal to jute bagging, having withstood the severest tests when exposed to fire, and the subject is being favorably considered at the New York Cotton Exchange.

Dismal accounts come from South Carolina and Georgia respecting the destruction of cotton, corn and rice by the recent floods.

An interesting conflict took place at Sydney, New South Wales, about August 1, between the local labor organizations and the Oceanic Steamship Company, assisted by the United States Consul Griffin. The former demanded that Captain Morse of the California steamship Mariposa should receive on board some 20 odd Australians to take the place of an equal number of Mongolians employed in the fire and engine-room of that steamer. In defiance of fierce opposition the consignees of the cargo succeeded, with the aid of the police, in discharging the vessel—an object that was important, in consideration of the fact that the merchandise on board consisted mainly of contributions for the Melbourne Centennial Exhibition. It had been widely affirmed that, although the Mariposa might land her cargo, she would be prevented from going to sea by lack of coal. Not only had the coal heavers refused to work upon the vessel, but all the coal-dealing firms in the city had been warned not to furnish her with fuel. Great surprise therefore was occasioned when 1500 tons of coal were floated alongside under protection of the Sydney police, the American Consul having in due season made ample provision for the precise emergency which arose.

The provisional government organized in Hayti, under ex-President General Boisrond Canal, is said to have the entire confidence both of native and foreign merchants. Business is brisk and the premium on gold has fallen to 20 per cent.

The East India cotton crop this season falls below the very short crop of last year.

The Julien electric car has made another successful run in this city and the company are eager to put it on the roads, but thus far the Aldermen withhold their sanction. The car rests upon double rails similar to those used on steam railways. The wheels of each truck, however, are set very closely together, the distance from center to center being only 3 feet, as compared with 4½ feet to 6 feet on the ordinary railway trucks. The entire truck, moreover, is pivoted not at the center but at the end. These two modifications enable the car to make very short curves and secure ease and smoothness of motion. The same motor that propels the car furnishes the light that supersedes the oil lamps in the car. Each truck carries a motor capable of propelling four cars, so that the danger from break down is reduced to a minimum. A fresh battery stores sufficient power to drive a car with ordinary load for 30 to 35 miles.

The export trade in cotton at New York is being diverted to Norfolk by the prevailing high ocean rates from this port, in conjunction with the lack of "compress machinery" to reduce the size of the bales, but a large machine will soon be in operation in this market, supplying much needed facilities.

The shipyards on the Delaware are expecting a number of new contracts, and are providing themselves with heavy tools. Claus Spreckels wants steamships of the largest size for the Australian line. Two steel steamships are about to be put under contract for the Ocean Steamship Company, of Savannah, for the coastwise trade. A steamer to carry oil in bulk is wanted by the Standard Oil Company, and Boulton, Bliss & Dallett, whose steamship line to Venezuela has proved so successful, want two more vessels to replace two recently sold for service on the Pacific. Work enough is in prospect to keep all the yards busy for the next two years.

Japan, like China, is giving earnest attention to the manufacture of cotton. Already there are 21 mills in Japan, the number having been doubled within the last 18 months, and it seems not unlikely that the Japanese will soon be independent of all other countries as regards cotton yarns. In China cotton yarns form about 30 per cent. of the value of all cotton goods imported, and the demand is continually increasing. Much yarn is imported from Bombay.

The Grand Opera House block, in Syracuse, was burned, 13th inst., and the loss is computed at $208,000. Among the occupants were John Hamon, Jr., stoves and hardware, loss $6000, and George S. Friend, stoves and household hardware, whose loss is estimated at $8000.

The contract for the erection of the main exposition building, in Pittsburgh, was awarded to Murphy & Hamilton for $155,303. The contract embraces every detail necessary to a complete fire-proof building. The work is to be commenced not later than October 1 and is to be finished in seven months from that date.

China now has an effective navy, comprising four armored ships and eight unarmored, all built in Germany within the past five years, also four cruisers, including two in course of construction in the extensive dock yards at Foo Chow and near Shanghai. All the new vessels are fitted with the most approved appliances known to modern warfare, fully abreast of the times.

A correspondent in Bombay, alluding to the production of Indian cotton goods, says that the competition is becoming more keen every year, since, owing to the cheapness of labor in India, the manufacturers in that country can produce and sell their goods at the lowest possible price. An idea of the rapid growth of this industry in India is afforded by the fact that in 1865 there were only 13 spinning mills in the Presidency of Bombay, whereas at the present moment there are 70, and the number of spindles increased during the period in question from about 285,000 to nearly 1,750,000. The number of looms now at work may be reckoned at nearly 15,000, against 3579 in 1865. The annual consumption of raw cotton now amounts to about 486,000 bales. In all India there are at present 95 cotton-spinning mills and weaving establishments, containing 2,250,006 spindles, 17,500 looms, and affording employment to nearly 75,000 hands.

The new treasury vault at Washington is a great subterranean apartment about 60 x 40 feet square and 15 feet high, and, when filled with silver dollars about six months hence, will contain $100,000,000 of treasure. The old vault adjoining is brim full and contains $90,000,000, mostly in silver. The Queen of Sheba would be more than astonished if she could view the spectacle.

The electric lights on the Brooklyn Bridge, like that removed not long ago from Hell Gate, are the subject of complaint by navigators who object to their dazzling effect. The Light House Board claim to have jurisdiction in the matter and propose to shade the lights, thereby removing objections, but the Bridge Company do not recognize the authority of the board, so that it remains for the United States Attorney-General to take such action as may be deemed necessary.

India will not very soon displace China in the tea trade. The annual report of the Imperial Maritime Customs, of China, for the year 1887, shows that the competition of its Indian rival has really had but little, if any, effect upon its tea trade, for there has been only an insignificant falling off in the total exports for the year. The total exports for the calendar year amounted to 2,096,097 piculs, against 2,217,295 piculs in 1886, a falling off of only 120,000 piculs or about 5 per cent. A much greater difference is shown in a comparison of values for the two years, the exports in 1886 being valued at 33,504,820 taels, while last year they amounted to only 29,379,838 taels, which is due, of course, to the comparatively low prices that prevailed last year. In the light of these figures there seems to be very little cause for apprehension that the tea trade is to be seriously disturbed, since Great Britain is almost the only market for the India product.

An event in Congress was the action of the House in passing the Senate bill amendatory of the Interstate Commerce law. As the bill came from the Senate, it carried out several of the recommendations of the Interstate Commerce Commission in the way of strengthening and simplifying the law. The bill, as it passed the House, carries a number of important amendments conferring concurrent jurisdiction upon United States and State courts as to complaints under it and requiring the Interstate Commerce Commission to prescribe for common carriers one uniform rate of classification, which shall be transmitted to the common carriers before the first Monday in July, 1889, and any violation of this classification shall be deemed unreasonable rates. The Commission is required to execute all the provisions of the law, and, upon its request, the Attorney-General of the United States shall institute and prosecute all necessary proceedings in the proper court for its enforcement. The final amendment makes it unlawful for any common carrier subject to the provisions of this act to carry refined oils and other petroleum products, cotton-seed oil and turpentine for any shipper in tank or cylinder cars, who shall own, lease or control the same in any manner, except upon the condition that said carrier shall charge the same rate for the transportation of said products in wooden packages or barrels, in carload lots, as in said tank or cylinder cars, the said tank and cylinder and said wooden

packages and barrels being carried free in each case. Senator Cullom, who carried the bill through the Senate, said he thought some of the amendments would endanger the passage of the bill at this session if insisted on. He will move, when the bill reaches the Senate, to nonconcur in the amendments and ask a committee of conference. He believes that the matter can be put in such a shape in conference as to meet the approval of both houses.

A steel steamer to carry about 3500 tons of iron ore has been contracted for in England, to ply between Philadelphia and St. Jago de Cuba, in the Earn steamship line. She will be called the Earnfoard, and have triple-expansion engines.

A Pittsburgh firm have received an order from Mexico for 25,000 fire-brick, to be used in the construction of a charcoal blast furnace in Durango. The cost of delivering the brick will be $250 per 1000. As the railroads do not extend nearer than 100 miles of the place where the furnace is to be built, it will be necessary to transport the brick that distance in wagons and on jackmules.

It is reported from Ottawa that the retaliation proposal has caused the successful floating of an $8,000,000 scheme, which includes the purchase of the North Shore Line from Quebec to Ottawa and the extension of the Pacific Railway from there to Sault Ste. Marie, thus giving direct railway connection between Lake Superior and the seaboard.

Cutlers' Hall, in Sheffield, England, has been nearly doubled in capacity this year, with an improved banqueting-room, extensive lavatory, drawing-room, &c.

The Treasury Department have decided that nail files, and nail cleaners with metal files, are dutiable at the rate of 45 per cent. ad valorem as manufactures of metal and bone; also, that articles commercially known as botton shanks (being small brass cups into which the molds are set in the manufacture of buttons) are dutiable at the rate of 45 per cent. ad valorem as manufactures of brass; also, that goods known as "wool back worsted coatings," composed of wool and worsted, are dutiable at the rate of 35 cents per pound and 40 per cent. ad valorem as manufactures of wool.

The recent cyclone in Cuba proves to have been frightfully destructive. Aside from the destruction at Cardenas, Havana, and other seaports, the tobacco crop suffered severely, and throughout the island over 3000 buildings of various kinds were prostrated. The aggregate loss is estimated at $10,000,000, and over 800 persons were killed. The loss of life in Sagua alone is about 400.

An exposition is to be held at Berlin, Prussia, from April to June, 1889, of machinery, apparatus of all kinds now in use to guard against accidents, tools, working materials in models; of plans, drawings, photographs and specifications; of copies of regulations, rules for factories, and printed matter relating to accidents and their prevention. All articles that relate generally to the protection of laborers and to the promotion of their welfare and safety while at work will be accepted, and the invitation to participate is extended to all nations. Consul-General Raine in a report to the State Department, dated May 4, 1888, furnishes a copy of the regulations to govern the exhibition, from which it appears that devices for ventilation of workshops and many other things which at first sight were hardly considered as belonging to an exhibition for the prevention of accidents are included. Applications made after July 1, 1888, long since passed, it is stated, will be considered only if any vacant space remains.

MANUFACTURING

Iron and Steel.

Rebecca Furnace, of the Kittanning Iron Company, Limited, at Kittanning, Pa., which has been idle for some months, was blown in last week, with good prospects for a steady run.

Fanny Furnace, operated by J. C. Hamilton, Shawnee, Ohio, trustee, will resume operations in a few weeks. A new bosh has been put in, general repairs have been made, and a new brick casting house, 37 x 85 feet, is being put up to replace the old one, recently destroyed by a wind storm.

W. B. Pollock & Co., of Youngstown, Ohio, manufacturers of boilers and all kinds of rolling-mill and blast-furnace work, have been awarded the contract for all the ironwork entering into the construction of the hot-blast stoves to be erected at the Tod Furnace of the Brier Hill Iron and Coal Company, at Youngstown, Ohio. The contract is quite a large one and will keep the firm busy for some time to come

After a long idleness the plant of the Etna Iron Works, Limited, at New Castle, Pa., was started up in full in all departments except the rail mill on Monday, the 10th inst. The works are being operated by A. W. Thompson, who has a lease of the same.

D. W. C. Carroll & Co., of Pittsburgh, on the 14th inst. closed a contract for the erection of two iron viaducts for the city of Denver, Col., to cross the railroads, which all center in one part of that city. One viaduct is to be 376 feet long and 32 feet high, and the other 785 feet long and 32 feet high. The viaducts are to be made of structural iron, including the approaches. They will be of sufficient width to allow of a driveway and two footpaths. The viaduct cost $97,000 and the approaches $21,000 additional.

Bids for building the superstructure of the Seneca street bridge, Cleveland, were opened in the office of the Board of Improvements last week There were five proposals, two of the bids being informal. The bidders were required to furnish figures for the 215 tons of iron and 35,000 feet of lumber required. The Pittsburgh companies did not furnish any sureties and, although their bids were recorded they were not considered. The bid of the Variety Iron Works was the lowest, the price for the iron being $74.50 per ton and for lumber $30 per 1000 feet. The King Iron Bridge and Manufacturing Company offered to furnish the iron for $96 per ton and the lumber for $28 50. The Detroit Bridge and Iron Works bid $105 per ton for the iron and $33 per 1000 feet for the lumber. The totals are as follows:

Variety Iron Works	$17,067.50
King Iron Bridge and Mfg. Company	21,607.50
Detroit Bridge and Iron Works	23,730.00
*Pittsburgh Bridge Company	26,790.00
*Shiffler Bridge Works, Pittsburgh	27,052.50

*Informal.

The contract for the substructure has already been let at $46,000, and the engine house yet to be built will cost $5000, making the total cost of the structure about $70,000.—*Cleveland, Ohio, Trade Review.*

The Wayne Iron and Steel Works, of Brown & Co., at Pittsburgh, have been closed down for the past two weeks, on account of a strike of the workmen. Recently two pieces of steel were spoiled and the firm demanded that in the future the heater shall be held responsible for such losses. To this the men would not agree and a shut-down was the result. It is expected that the matter will be amicably arranged during the present week and operations resumed again.

The new plant of the Allegheny Bessemer Steel Company, at Duquesne, Pa., about 25 miles from Pittsburgh, is rapidly nearing completion, and is expected to be ready for operations by January 1. The Bessemer department is already finished and filled with the most improved modern machinery. In the rail mill hydraulic working machinery will in nearly every instance take the place of roll-hands, furnacemen, shearsmen, and hot-bed men.

Norway Furnace, at Bechtelsville, Pa., operated under lease by Gabel, Jones & Gabel, of Pottstown, Pa., is at present undergoing extensive repairs. It will resume blast about November 1, next.

The *Advance*, of Latrobe, Pa., says concerning the steel plant to be erected there: "After a large amount of preliminary labor, such as drafting, corresponding, and making preliminary arrangements, P. J. Dalton has secured the contract for the foundation work of several large buildings and will put his men to work at an early day. Bids for the ironwork of the buildings are in from a number of firms, as are also bids for the construction of the greater part of the machinery. When work is once commenced the buildings will be put up rapidly."

The plans of the building to be erected at Washington, Pa., by the Novelty Steel Wheel Company, of Pittsburgh, have been finished, and the contract for the building will be let during the present week. As was stated in *The Iron Age* of last week, the company will manufacture steel wheels exclusively for wagons, buggies, &c. About 200 hands will be given employment by the new firm, and the works are expected to be ready for occupancy by January 1, next.

The Henderson Steel and Mfg. Company, of Birmingham, Ala., have increased the capacity of their 1½-ton experimental open-hearth furnace to 3½ tons. The first melt in the enlarged furnace was successfully made on the 22d of August.

It is understood that if the Laclede Plate and Sheet Mill Company secure another lease on the Laclede Rolling Mills they will order improvements of the value of $20,000 or $25,000, to better adapt the mill to the requirements of the rolled iron trade of the West, and of this locality more especially. It is undecided as yet, however, which of the three interests offering to take the property under a lease will secure it, though the matter is expected to be settled in a week or two. But it is quite safe to say that, in any event, the mills will be operated this winter.—*Age of Steel, St. Louis.*

No. 5 furnace of the Thomas Iron Company, at Hokendauqua, Pa., is undergoing extensive repairs and will be ready soon for blast again.

The employees of the American Iron Works of Jones & Laughlins, Limited, at Pittsburgh, have organized a beneficial association. None but those employed in the machine shop, polishing mill, foundry, chain factory, bolt factory and pattern shops and roll turners are eligible to membership in the new organization, which will pay to a sick or disabled member incapacitated for work $5 per week, and, in case of the death of a member, $100 to pay funeral expenses. The association have an initial membership of 150.

James P. Witherow, engineer and contractor, of Pittsburgh, whose works are located at New Castle, Pa., has received the contract for the erection of the buildings for the plant of the Latrobe Steel Company, at Latrobe, Pa. The buildings will be made of wrought iron and will be fire-proof. The dimensions of the open-hearth steel department will be 250 x 80

feet. Connecting with it will be an L the same length and 40-foot span. The hammer shops will be 350 feet long, with an 80-foot span, and will have an L the same length and 40-foot span. The company will manufacture tires for all kinds of wheels. About 300 men will be given employment. The projectors of the enterprise are Eastern capitalists.

Some time ago P. L. Kimberly & Co., Limited, proprietors of the Atlantic Iron Works, at Greenville, Pa., made a proposition to their workmen to work six weeks and then receive two weeks' pay, and pay every two weeks thereafter. This proposition has been accepted and the plant, which has been idle for some months, has resumed operations in nearly all departments. The principal product is cotton ties, about 60 tons per day being the present output. The works contain 26 puddling furnaces, 4 heating furnaces and 1 8-inch and 1 10-inch train of rolls.

The Rogers Foundry Company, Belleville, Ill., have been awarded an increase of contract for cable yokes for a Denver street railway. This line of work has become a leading specialty with them, and they are now getting ready to increase their output of yokes from 125 a day, as at present, to 150.

The Bouton Foundry Company have sold their extensive architectural iron works, on Archer avenue, Chicago, to a railroad company, whose line will pass over the site. Under the conditions of the sale the Bouton Foundry Company are given a year in which to select a location elsewhere, so that they will suffer no interruption to their business by reason of the enforced removal. They are now considering the relative advantages presented by several choice locations, but have not yet determined which of them will be selected.

G. A. Millard, of Indianapolis, Ind., has opened an office at 14 Vance Block, for the sale of pig iron and coke, copper, tin, antimony, old wheels, old rails, steel rails, blooms, billets, slabs and wire rods.

Machinery.

The largest cotton press ever built at the works of the Scott Foundry and Machine Company, Limited, at Reading, Pa., was shipped to Brunswick, Ga., last week. The press weighs 230 tons, standing on a base 12 x 24 feet, connecting with four links 38 feet long and each weighing 9 tons. One of the castings of the press weighs 25 tons.

The Bethlehem Steam Heating Company, of Bethlehem, Pa., is the name of an intended corporation, which has applied to the governor for a charter.

The Southern Pacific Railroad Company have purchased a combined arc and incandescent plant, consisting of eight double lamps, twenty-four 25 C. P., and ten 100 C. P. lamps to light their station and surroundings at Los Angeles, Cal., using the Waterhouse system controlled by the Waterhouse Electric and Mfg. Company, of Hartford, Conn.

The works of the Russell Mfg. Company, brass founders and machinists, of McKeesport, Pa., which have been idle for some time past, resumed operations on Monday the 17th inst. S. M. Highlands, who has been with the American Water Works Company for a number of years, has been secured as general manager, and it is expected that the works will continue in operation, as the firm have a number of large orders on hand.

Among their late sales the Ball Electric Light Company, of New York City, report the following: 100 arc lights and 200 incandescents, through their Mexican agents, I. Aguirre & Bros., for Toluca, Mexico. 35 arc lights (increase) to the National Worsted Mills, Providence, R. I. 70 arc lights to W. A. Walton & Co., Wood River Junction, R I. Hartford Electric Light Company, Hartford, Conn., 200 arc lights (increase). Jersey City Electric Light Company, Jersey City, N. J., 50 arc lights (increase). Novelty Electric Company, Philadelphia, Pa., 25 arc lights. Clarksburg Electric Light Company, Clarksburg, W. Va., 70 arc lights. Pennock Bros., Minerva, Ohio, 25 arc lights. J. L. Bueron, Quezaltenango, Central America, 210 arc lights, and 350 incandescents. Muncie Electric Light and Power Company, Muncie, Ind., 25 arc ligots. Consolidated Coal and Iron Company, Wellston, Ohio, 26 arc lights. Ball Electric Light Company, of Cincinnati, Ohio, 30 arc lights (increase). Manton Mills, Manton, R. I., 70 arc lights (increase).

The new works of the Cleveland Twist Drill company at Cleveland, Ohio, are rapidly approaching completion, and will probably be occupied by the firm early in November next. The main building is 100 x 40 feet, with tempering and forge shops adjoining. New machinery will be added to keep up with the increase in business.

The Westinghouse Electric Company, of Pittsburgh, are at present at work on a plant for a town on the Pacific coast near San Francisco. There will be 1300 lights put up as soon as possible, together with the necessary engines, dynamos, &c., and the plant will be in operation in the course of a couple of months.

The Pittsburgh, Fort Wayne and Chicago Railroad Company have recently added to their equipment four engines, which weigh 65 tons each. These engines are calculated to make the run between Alliance and Crestline, over 100 miles, without stopping for coal or water.

The Kimble Steam Engine Company have been organized at Kalamazoo, Mich. It has an authorized capital of $100,000, of which $75,000 have been paid in. It will give employment to several hundred men.

The Canton Car Company, of Canton, Ohio, will change their name shortly to the J. H. McLain Machine Company.

Eynon & Marshall, engines builders and machinists, of Cleveland, Ohio, are receiving numerous orders for their slab-milling machine. On account of an increase of orders the company have been compelled to erect a new factory, which they expect to occupy in November next.

The Western Mfg. Company, of Lincoln, Neb., have recently been incorporated under the laws of the State of Nebraska, and the following officers have been elected to take charge of its affairs from and after this date: J. F. Barnard, president; H. J. Walsh, vice-president; M. D. Welch, secretary and treasurer; W. W. Marsh, superintendent of shops. Mr E. Hurlbut, Jr., the former manager, retired from the company on the 1st inst. The company manufacture farm machinery. They write us also that they have recently added a cooperage department to their works, and have now a capacity of 500 barrels or tierces per day, and are prepared to fill all orders for above goods.

Hardware.

It is stated that Col. S. F. Scott and C. P. Deatherage have purchased a two-thirds interest in the machinery of the Harrison Wire Works, St. Louis, the other third being held by James C. Anderson, Chicago. It is also announced that the machinery will be moved to Kansas City, Mr. Anderson managing the concern.

The Ludlow-Saylor Wire Company, St. Louis, Mo., have added to their plant facilities for doing electro-bronze plating. They have just completed some elegant work for the new Mercantile Library building in the way of artistic brass elevator inclosures and iron grilles for library room. They have also recently furnished the American Central Insurance building with brass elevator inclosures and electro-bronze work in their office, besides some other large jobs for banks and buildings throughout the West and South.

The Iowa Farming Tool Co., Fort Madison, Iowa, are putting in a plant for the use of crude oil as a fuel, instead of anthracite coal. The expense attending this departure is considerable, but it is anticipated that it will give better results, and diminish the cost of producing the goods.

L. B. Heller & Co., Montreal, announce that they have commenced the manufacture of Horse Rasps and Files having the brand "L. B. Heller," the work being under the personal supervision of L. B. Heller, who was formerly connected with Heller & Bros., Newark, N. J., the two houses being, however, entirely distinct.

The Celina Tack and Nail Company have been incorporated at Celina, Ohio, with a capital stock of $20,000. B. S. Taylor and others are the incorporators.

Miscellaneous.

The Reading Coal and Iron Company are considering the advisability of sinking a shaft midway between the Potts and Keystone collieries, near Ashland, Pa. It is claimed that the vein which would be tapped is 35 feet in thickness, and would not be exhausted for half a century. Recently the company extended its operations in the East Franklin colliery, which had been abandoned as of little value, and struck a heavy vein of hard anthracite of excellent quality. As soon as the breaker and shaft shall have been put in good condition mining operations will be commenced.

The Star Fire-Brick Company, of Pittsburgh, have just closed a contract for 25,000 fire brick, to be delivered at Durango, Mexico. They will be used in the construction of a charcoal blast furnace to be built by the Mexican Iron Mountain Mfg. Company. The cost of delivering these brick will be about $250 a thousand. As the railroads do not extend nearer than 100 miles of the place where the furnace is to be built, it will be necessary to transport the brick that distance in wagons and on jack mules. This firm are also filling an order for 250,000 brick for the Isabella Furnace Company. They will be used in rebuilding furnace No. 2, which is now in blast, but will be blown out some time this fall. The same firm have an order for 300,000 brick, which will be used in relining Lucy Furnace No. 2.

Edw. D. Bolton, of the firm of T. William Harris & Company, 44 Broadway, New York, has been appointed consulting engineer for Asheville, N. C., in connection with their sewerage system, upon which it is proposed to expend $100,000. John G. Aston, the city engineer, will be the resident engineer.

The Common Sense Stove Polish Company have succeeded Gana & Martin, manufacturers of stove polish and shoe blacking, 270 West Randolph street, Chicago. They are distributing to purchasers of their common sense stove polish copies of Munkacsy's celebrated painting, "Christ before Pilate." It is a photo-gravure, 11 x 14 inches in size, and said to be the best copy of this famous work now in the market. A copy of the picture double this size, 22 x 28 inches, is given to each dealer for his personal use.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St. }
PHILADELPHIA, Pa., September 18, 1888. }

Pig Iron.—The market has shown a hardening tendency during the week, and in the majority of cases buyers would have to pay a little more money for desirable brands. There is no quotable change in the general market, but inside prices, such as $16 for Gray Forge, $17 for No. 2, and $18 for No. 1, are now very exceptional, and are hardly taken into consideration by those who control good Irons. But consumers make no great effort to place orders, as they are generally pretty well provided for, and are more inclined to await developments than to pay advances on material which may not be required for two or three months to come. Sellers, for the same reason, have plenty of orders on their books, and if belated buyers must have Iron they have no alternative but to pay the advance, averaging, perhaps, 50¢ ℔ ton from the lowest. Consumption is large, and the general position is very satisfactory, but it is hardly likely that prices will be marked up again, for the present at all events. Production is increasing, the change as shown by last week's *Iron Age* being at the rate of 6000 tons per week increase, comparing September 1 with August 1. Then there are intimations of a further increase in the South at an early date, so that it is not merely a question of absorbing the present output, but several thousand tons per week on the top of that. If prices remain as they are the increased supply may not be as much, but a dollar a ton on the price means a great deal more Iron for sale, but there is no reason to suppose that it will make consumption any the greater. For these and other reasons the trade are by no means inclined to pay fancy prices. They will take liberal quantities at the old figures, but only such small lots as they must have at the higher prices. Meanwhile sales are being made on the basis of $16 @ $16.50 at tide for Gray Forge, $17.50 @ $18 for No. 2, and $18.50 @ $19 for No. 1. In exceptional cases a few orders may have been taken at $16, $17 and $18, but they would not be fair quotations in the present condition of the market, which, as already stated, is unusually strong without being feverish or excited.

Foreign Iron.—Prices are purely nominal, as consumers can do much better on domestic Irons. Sellers quote $20 @ $20.50, c.i.f., duty paid, for Bessemer and $26 @ $26.50 for 20 % Spiegel, but there are no bidders at anything near these figures.

Blooms.—A good demand is reported, and prices are firm at about the following quotations: Nail Slabs, $20 @ $29.50; Billets from $30 to $35, f.o.b. cars at mill, according to analysis; Charcoal Blooms, $52 @ $54; Run-out Anthracite $42 @ $44; Scrap Blooms, $33 @ $35 ℔ "bloom" ton of 2464 lb. Foreign at tide, c.i.f., duty paid, $29.50 @ $30.50 for Nail Slabs; $32.50 @ $34 for 4 x 4 Billets, and $35 @ $39 for Siemens-Martin, price according to analysis, &c.

Muck Bars.—Prices are very firm at about $29 @ $29.50, delivered, with quite a large business at figures equivalent to $29, Philadelphia. There is still a good deal of inquiry and bids at about $28.75 for large lots, but holders are not inclined to make concessions.

Bar Iron—The mills have taken in a good many orders of late, and are so comfortably situated that they are very firm in quoting on new business. Probably 1.85¢ might be accepted for good-sized orders, but some of the leading mills quote 1.9¢ @ 1.95¢ firm and there is no doubt that the tendency is steadily in sellers' favor. Inquiries are in the market from car-builders, and it is thought that some important additions to the work on hand will be made before the end of the month. Skelp orders are also on the market, with sales at 1.85¢, although 1.87½¢ @ 1.9¢ is asked for early deliveries. Taking the market as a whole, the position is decidedly favorable to sellers, and, while no important changes in prices are expected, there seems to be plenty of business and firm prices, varying, as we have said, from 1.85¢ to 1.9¢ for strictly good iron.

Plate and Tank Iron.—A good business is reported at all the mills in this vicinity. Prices are firm, but not higher, although a little more pressure in the demand would soon lead in that direction. The mills seem to have plenty of work up to November and the indications are very promising for a good demand during the latter portion of the year. Prices are firm as last quoted: Ordinary Plate and Tank Iron, 2.05¢ @ 2.15¢; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.3¢ @ 2.4¢; Shell, 2.7¢; Flange, 3¢ @ 3¼¢; Fire-Box, 3½¢ @ 4½¢.

Structural Iron.—No large orders are offering at the moment, but the mills are kept fairly busy on old contracts, and with such small lots as are called for from day to day. There is nothing in the outlook calling for special remarks, business being rather quiet, but manufacturers appear to feel hopeful of renewed activity in the near future. Prices are steady as last quoted—viz.: 2.10¢ @ 2.15¢ for Bridge Plate; 2¢ @ 2.10¢ for Angles; 2.6¢ @ 2.7¢ for Tees, and 3.3¢ for Beams and Channels, Iron or Steel.

Sheet Iron.—The demand is not up to expectations, although the mills appear to find a market for their product, and are not accumulating stock to any extent. Prices are nominally unchanged, but in some instances very low figures have been named. Small lots of the best make are quoted about as follows:

Best Refined, Nos. 26, 27 and 28	3¼ @ 3½¢
Best Refined, Nos. 18 to 25	3 @ 3¼¢
Common, ¼¢ less than the above.	
Best Bloom Sheets, Nos. 26 to 28	4½ @ 4¾¢
Best Bloom Sheets, Nos. 22 to 25	4 @ 4¼¢
Best Bloom Sheets, Nos. 16 to 21	3½ @ 3¾¢
Blue Annealed	2.8 @ 3 ¢
Best Bloom, Galvanized, discount	62½ %
Common, discount	67½ %

Merchant Steel.—There is an increased demand for the better grades, and prices show considerable firmness. Lots from store are quoted as follows: Tool Steel, 8½¢; Machinery, 2.6¢; Crucible Spring, 4½¢; Open-Hearth Ordinary Spring, 2.7¢ @ 2.9¢; Crucible Machinery, 5¢; Best Sheet Steel, 10¢; Ordinary Sheet, 8¢.

Steel Rails.—The market is very quiet, and there is not much reason to expect improvement in the near future. Steel, in other shapes, however, is in good demand, so that the mills are doing fairly considering the light demand for Rails. Prices are nominally $29 at mill, but on desirable orders more or less shading would be done.

Old Rails—Not a single transaction to report in this market. Holders of lots in store decline to name prices at present, but bids of $23 to $23.50 have been made but not accepted, as the parties expect to get more money for them later on.

Scrap Iron.—In good demand at about the following prices: $20.50 @ $21 for cargo lots; $21.50 @ $22 for carload lots, delivered, or for choice $22.50 @ $23; No. 2 do., $14 @ $15; Turnings, $13 @ $14; Old Steel Rails, $20 @ $21; Cast Scrap, $15 @ $16; do. Borings, $9 @ $10; Old Fish Plates, $25 @ $26. Old Car-Wheels, $17 @ $18, Philadelphia, or its equivalent.

Wrought-Iron Pipe.—Business continues quite active, and all sizes of Pipe are in good demand, although prices do not improve to any great extent. Discounts are quoted as follows: Black Butt-Welded, 55 %; on Galvanized do., 45 %; on Black Lap-Welded, 65 %; on Galvanized do., 52½ %; on Boiler Tubes, 60 %.

Nails.—The general situation remains in about the same condition as noted last week. Stocks are accumulating preparatory to the fall trade, which at the moment looks like being a large one. It is intimated that Nails are being sold in and around Philadelphia at ruinous prices—some say as low as $1.70 at mill. Lots from store are quoted at from $1.90 to $2.

Cincinnati.

CINCINNATI, September 17, 1888.

Pig Iron.—The local market for Pig Iron during the past week has been active and strong, with full values realized, but there has been no advance of moment, nor is one desired either by buyers or sellers at present. Individual sales have again been large, and the aggregate transactions have probably been in the neighborhood of 25,000 tons. All grades of Mill Iron have been sought, and there are very few brands of Foundry Iron which have not sold well. Ohio furnaces which accumulated Iron during the prevalance of low prices during the past summer have proved their wisdom and reaped a harvest, and not only have they disposed of stocks on hand, but have obtained large orders for delivery throughout the remainder of the year. At the moment, however, the feature of interest is the sudden and pressing demand for Car-Wheel Iron, both Southern and Northern production. With reduced stocks and increased consumption even in advance of the larger output, the confidence of sellers is apparently well guaranteed. Buyers tacitly admit the strong situation, but official returns are looked for with unusual interest. Among the large transactions have been 5000 tons No. 2 Southern Forge, 2500 No. 2 Southern Coke Foundry and 1000 tons Southern Car-Wheel, all on basis of quotations. The following are the approximate quotations for the local market, cash, f.o.b. Cincinnati:

Hot-Blast Foundry.	
Southern Coke, No. 1	$17.50 @ $18.50
Southern Coke, No. 2	16.50 @ 17.50
Southern Coke, No. 3	15.50 @ 16.00
Ohio Soft Stone Coal, No. 1	17.00 @ 17.50
Ohio Soft Stone Coal, No. 2	15.50 @ 16.00
Mahoning and Shenango Valley	17.50 @ 18.50
Hanging Rock Charcoal, No. 1	20.50 @ 22.50
Hanging Rock Charcoal, No. 2	19.50 @ 22.00
Tennessee and Alabama Charcoal, No. 1	18.50 @ 19.50
Tennessee and Alabama Charcoal, No. 2	17.00 @ 18.00
Forge.	
Strong Neutral Coke	14.75 @ 15.25
Mottled Neutral Coke	13.50 @ 14.00
No. 1. Mill Coke	15.00 @ 15.50
No. 2 Mill Coke	14.50 @ 15.00
Car-Wheel and Malleable Irons.	
Southern Car-Wheel	20.00 @ 23.00
Hanging Rock, Cold Blast	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable	20.50 @ 21.50

Manufactured Iron.—Foundries and rolling mills are reported well supplied with orders, and a firm tone prevails for all kinds of Manufactured Iron. Common Bar Iron, 1.90¢; Charcoal Bar Iron, 2.90¢ @ 3¢; Sheet Iron, Boiled, Nos. 10 to 27, 2.50¢ @ 3.25¢; Sheet Iron, Charcoal, Nos. 15 to 25, 3½¢ @ 4½¢ ℔ lb.

Nails.—The jobbing prices have been advanced 10¢, with a fair demand, and there is some talk of a further advance of 10¢, but it is not generally obtained. Job-

bing prices are based upon 12d @ 40d, which sell at $2.10 ℔ keg, with 10¢ rebate in carload lots, at mills. Steel Nails sell at $2.10 and Steel Wire Nails at $2.75 ℔ keg

Old Material.—The importunities of buyers of Old Rails have increased rather than otherwise, but the offerings are small, and in the absence of trading no reliable quotations can be given, but $25 seems to represent the market. Old Wheels, too, are scarce and wanted, and nominally quotable at $22, spot.

Chicago.

Office of *The Iron Age*, 95 and 97 Washington St., CHICAGO, September 17, 1888.

Pig Iron.—The market has been quiet as compared with previous weeks, though a few good sales are reported, varying from 500 to 1000 tons each. It is believed that the leading consumers of Pig Iron in this vicinity have now nearly all placed contracts for the minimum quantity which they will need up to the close of the year. If their trade improves they will be obliged to increase their purchases, but at present the indications are not very favorable to an expansion of business on this account. The railroad companies are still economizing as much as possible, the architectural foundries report new work scarce, with almost a total lack of large building operations, and general foundries are running very light. The hand-to-mouth buying which is always in progress may be sufficiently large in volume, however, to absorb the furnace output still unsold and to maintain prices at the recent advance. This view is strenghtened by the fact that some furnace companies hitherto holding back have lately pushed up their rates in line with the others. Stocks at the furnaces are diminishing, although production is increasing. There was a reduction in August of 19 % in Coke stocks and over 9 % in Charcoal. While it is possible that new influences may come into play which will revive the demand for Pig Iron and cause another upward movement, it is worthy of note that the market is now halting with no special tendency in either direction. Changes in the prices of particular brands may be rendered necessary by the advances in freight rates from points of production to this market. For instance, a new tariff is shortly expected on Pig Iron from the Mahoning and Shenango valleys. The present rate is $2.25 ℔ ton, and the new rate will probably be $2.50. On October 1st an advance of at least 25¢, and possibly 50¢, is expected in the freight rates on Southern Pig Iron. These changes inure to the benefit of local furnaces, whose prices have been kept down in order to hold their share of the market against outside competition. Very little is now being done here in Southern Pig Iron, particularly as the prices quoted for such brands as are not sold up are too high to result in business. Cash quotations, f. o. b. Chicago, are as follows: Lake Superior Charcoal all numbers, $19.50 @ $20.50 ; Alabama Car-Wheel, $26.25; Southern Charcoal Foundry. No. 2, $18.50 ; Jackson County Softeners, No. 1, $18.25 @ $18.75; Hocking Valley Soft Foundry, No. 1, $17.-50 @ $18; American Scotch (Blackband) No 1, $19 @ $20 ; other Ohio Scotch Irons, No. 1, $18 @ $18.50; Lake Superior Coke, No. 1, $17.50 @ $19 ; No. 2, $16.50 @ $17; No. 3, $15.50 @ $16 ; Southern Coke, No. 2, $17.75 @ $18 ; No. 2½ and Ohio Bright, $17.25 @ $17.50; No. 3, $16.75 ; No. 1, Mill, $16.50.

Bar Iron.—Numerous inquiries are reported from would-be buyers at past prices, but they hesitate about making contracts for large quantities at the figures now named by the manufacturers. The usual quotations are 1.75¢ @ 1.80¢, half extras, f.o.b. Chicago, for carload lots of Common Iron, with a very few mills willing to shade the lower figure, while others ask 1.85¢. The firm attitude maintained by the Mahoning Valley mills would seem to indicate that they find better markets than Chicago for the bulk of their output. The Pittsburgh mills evidently are in the same condition, as they quote as high a price, f.o.b. mill, as the ruling Chicago quotations. Jobbers have advanced their rates on small lots, from store, to 1.90¢ @ 2.10¢ for Common Iron.

Structural Iron.—The approaching close of the season is affecting the demand both for building and bridge work, and a limited business in this material is in progress, with some effect on prices. Mill lots are quoted as follows, f.o.b. Chicago: Angles, 2.25¢; Universal Plates, 2.30¢; Tees, 2.55¢; Beams and Channels, 3.40¢. Store prices continue at 2.40¢ @ 2.50¢ for Angles; 2.60¢ @ 2.70¢ for Tees, and 3.80¢ for Beams.

Plates, Tubes, &c.—An active business is reported in Plates, but the transactions of the week have been mainly in small lots. Quotations are firm but unchanged, as follows: Heavy Sheets, Nos. 10 to 14, 2.65¢; Tank Iron, 2.55¢; Tank Steel, 2.80¢; Shell Iron, 3¢; Shell Steel, 3.25¢; Flange Iron and Steel, 4¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢; Boiler Tubes, 60 % @ 65 % off on 2¼-inch and larger, and 62½ % off on 2-inch and smaller.

Sheet Iron.—Large buyers seem to have about covered their requirements for the season. Mill representatives report but light sales and on these they have exacted still higher prices, now quoting No. 27 at 3.10¢, at mill, or 3.25¢, f.o.b. Chicago, but this price can, of course, be shaded on favorable deliveries. Jobbers have been compelled to advance their prices and now ask 3.20¢ for No. 24, 3.30¢ for Nos. 25 and 26 and 3.40¢ for No. 27, in small lots. A concession is made to best buyers.

Galvanized Iron.—The demand keeps up very well and manufacturers' agents are now sending even small orders to the mills because of their inability to fill them from their depleted stocks. The manufacturers selling cheapest have marked up their prices to the rates maintained by their colleagues and the jobbers have been obliged to follow suit. Quotations for small lots are now 60 % off for Juniata and 60 % and 5 % off for Charcoal.

Merchant Steel.—Some deferred contracts were placed during the week by Agricultural Implement manufacturers, but otherwise the local market was without special feature. A fair jobbing trade is in progress. Prices from store are firmly maintained, as follows: Bessemer Bars, 2.30¢ @ 2.40¢; Tool Steel, 8½¢ @ 9½¢; Specials, 13¢ @ 25¢; Crucible Spring, 4.40¢; Open-Hearth Spring, 2.90¢; Open-Hearth Machinery, 2.75¢ @ 3¢; Crucible Sheet Steel, 7¢ @ 10¢.

Steel Rails.—Some small orders were taken during the week, but the manufacturers still report the condition of their branch of trade far from encouraging. Nevertheless, inquiries are increasing, and it would not be surprising if a decided change in tone should occur within the next four weeks. Railroad companies are asking for quotations on round lots, part to be delivered this fall and part next spring. The manufacturers prefer not to quote for next year, but are anxious to get all the orders they can for this year, and believe that orders will be placed on that basis when the railroad companies realize that they have taken a firm stand. Quotations are nominally $30 @ $31.

Old Rails and Wheels.—The excitement in Old Iron Rails seems to have subsided for the present, but prices have not receded. Transactions are reported at rates ranging from $24.50 to $25.35. The supply is still limited, but apprehensions of great scarcity have been dissipated by the continual offerings made by railroad companies, who are collecting Old Rails from all along their lines to take advantage of the high prices now obtainable. Old Steel Rails are more active. A dealer secured 1000 tons at $17.50, as they run. Consumers have paid from $19.50 to $21 for selected. Old Car-Wheels are subject to singular fluctuations, probably caused by preferences for particular makes. Small sales are reported at prices ranging from $18.50 to $20. The ruling rate is about $19.50. The largest transaction reported is a sale of 250 tons at private terms.

Scrap.—Business has been fair among the local dealers, particularly in Wrought. For Cast the demand is quiet. The stock of Steel Scrap has been pretty well cleaned up. Inquiries for Wrought show that consumers are looking about for stock, and dealers are advancing their prices, in consequence of the renewed interest shown. Quotations for carefully selected are as follows, ℔ ton of 2000 lb: No. 1 Forge or Railroad Shop, $20 @ $20.50; Track, $18.50; No. 1 Mill, $15 @ $15.50; Light Wrought, $11; Horseshoes, $18; Axles, $25; Cast Machinery, $13.50 @ $14; Stove Plate, $11; Cast Borings, $9; Wrought Turnings, $11; Axle Turnings, $13; Coil and Leaf Steel, $16; Locomotive Tires, $16.50. Dealers are now offering $13 @ $14 for Mixed Country Scrap.

Hardware.—The demand for Heavy Hardware is very fair, while in Shelf Hardware there is a seasonable improvement, in which, however, some houses seem to be favored with a larger share than others. The demand is quite general, but a specially free movement is reported in Tools, Builders' Hardware, Screws, Nuts and Bolts. Prices are firm and in a few cases an upward movement is reported. Stove Boards have stiffened up to 60 % off for Crystallized, and other kinds at corresponding rates, with somewhat of a scarcity in the supply. Solder is now held at 17¢ @ 18¢ for strictly half and half. Collections are very good for the season.

Nails.—Manufacturer's agents have had a quiet week, evidently doing but little to push trade. They quote prices on Steel Cut Nails at $1.95 @ $2.02½ in large lots, f.o.b. Chicago. Jobbers also report but a limited demand, with small lots held at $2.10 for Steel and $2.65 for Wire Nails.

Barb Wire.—The demand is slowly improving, but as yet trade is confined almost wholly to small lots, very few carloads being called for. Manufacturers are receiving inquiries from heavy buyers, but their views as to prices are not close enough to result in immediate business. Nominal prices for small lots are still 3¢ for Painted, and 3.75¢ for Galvanized.

Pig Lead.—Consumers are believed to have secured about 500 tons of spot Lead during the week, at 4.80¢. The speculative demand has ranged from 4.80¢ to 4.85¢. At the close 4.75¢ was the best bid. Manufacturers of Lead Pipe and other Lead products state that the advance they have been obliged to make in consequence of the increased cost of Pig Lead has not restricted their trade, but they are compelled to watch the market very closely in order to secure themselves against possible reactions.

Louisville.

LOUISVILLE, KY., September 17, 1888.

Pig Iron.—The market continues firm, and advices from other points indicate that present prices of Iron are being held up. Where parties desire large blocks of

Iron for immediate delivery it is difficult to place orders, as furnaces generally are largely sold up to January. Silver Gray Iron continues very scarce, and but few Southern furnaces are able to furnish Iron of this quality. It is thought, however, that as soon as the wet season begins this grade of Iron will be more abundant. There is a movement on foot among Southern furnaces to change the grading of Iron, and make same correspond with the grading of Iron East. As,

No. 1 Foundry	to be present		No. 2 Foundry.
No. 2	"	"	No. 2½	"
No. 3	"	"	No. 1 Mill.	
Gray Forge	"	"	No. 2	"
No. 1 Bright	"	"	Open Bright.	
No. 2	"	"	Medium or Close Bright.	

Silver Gray Mottled and White to remain the same.

None of the new furnaces have yet come in blast, and it is difficult to tell when they will be making Iron, though it is thought some time during the course of the next 60 days. Current quotations are as follows:

Southern Coke, No. 1 Foundry	$17.00 @ $18.00
" No. 2 "	16.00 @ 16.50
" No. 2½ "	15.50 @ 16.00
Hanging Rock Coke, No. 1 Foundry	17.25 @ 17.75
Hanging Rock Charcoal, No. 1 Foundry	21.00 @ 23.25
Southern Charcoal, No. 1 Foundry	18.00 @ 18.50
Silver Gray, different grades	14.50 @ 15.25
Southern Coke, No. 1 Mill, Neutral	14.75 @ 15.25
" No. 2 "	13.75 @ 14.75
" No. 1 " Cold Short	14.25 @ 14.75
" Charcoal, No. 1 Mill	15.75 @ 16.50
White and Mottled, different grades	13.50 @ 13.75
Southern Car-Wheel, standard brands	23.00 @ 24.00
Southern Car-Wheel, other brands	19.25 @ 21.25
Hanging Rock, Cold Blast	22.25 @ 25.25
Hanging Rock, Warm Blast	19.25 @ 20.25

Old Rails and Wheels are very strong, and but few lots are offered for sale, speculators and brokers having largely bought up all available amounts. Prices are $24 for Old Rails and $21 for Old Wheels.

Cleveland.

CLEVELAND, September 17, 1888.

Iron Ore.—One of the largest dealers in the city reports the sale of 20,000 tons of No. 2 Bessemer Ore at $5.25, f.o.b. cars Cleveland. The same grade of Ore brought $4.75 six weeks ago. Many transactions in a smaller way are being closed and the market seems to be fully as active as the most hopeful had anticipated for this season of the year. Transportation rates have advanced to $1.30 from Escanaba; $1.50 from Marquette, and $1.75 from Ashland and Two Harbors. The season's shipments to date are slightly in excess of 3,000,000 tons, with indications of the season's output reaching figures somewhere between 3,750,000 and 4,000,000 tons. Following are the present quotations, f.o.b. cars lower lake ports:

No. 1 Specular and Magnetic Bessemer Ore	$6.00 @ $6.15
No. 1 Specular and Magnetic Non-Bessemer Ore	5.25 @ 5.50
Red Hematite Bessemer Ore	5.00 @ 5.25
Red Hematite Non-Bessemer Ore	4.20 @ 4.40
Menominee Range Bessemer Ore	5.25 @ 5.50
Menominee Range Non-Bessemer Ore	4.00 @ 4.25
Gogebic Range Bessemer Ore	5.25 @ 5.50

Pig Iron.—Sales of No. 1 Strong Foundry and of No. 1 Soft Silvery have occurred at an advance of 50¢ ℔ ton above last week's quotations. It is doubtful, however, whether furnacemen are advancing prices in proportion to the steadily increasing demand which is rapidly clearing up the supply, both present and prospective. The market is very firm at the following cash quotations:

No. 1 to 6 Lake Superior Charcoal	$20.50 @ $21.50
No. 1 Strong Foundry, Bessemer quality, ℔ ton	18.20 @ 19.00
No. 1 Strong Foundry, ℔ ton	17.70 @ 18.30
No. 2 Strong Foundry, ℔ ton	16.70 @ 17.30
No. 1 American Scotch, ℔ ton	18.25 @ 18.70
No. 2 American Scotch, ℔ ton	17.20 @ 17.70
No. 1 Soft Silvery, ℔ ton	18.50 @ 19.00
Mahoning and Shenango Valley Neutral Mill Irons, ℔ ton	16.00 @ 16.70
Mahoning and Shenango Valley Red Short Mills, ℔ ton	17.00 @ 17.70

Scrap Iron.—There is a fair demand for No. 1 Wrought at $19 @ $19.50. A few sales of Old American Rails at $25 are reported.

Manufactured Iron.—Additional sales of Common Bar in round lots at $1.65 are reported.

Nails.—The market is fairly active, Steel Nails bringing $2.10 and Iron Nails $1.95, while the demand for Steel Wire Nails at $2.60, from store, continues heavy.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, September 17, 1888.

Pig Iron.—The condition of the market is conservative, yet strong at outside quotations. The tendency to purchase for speculative purposes has fallen off to some extent, but there is still a disposition to lay by a few 100 and 500 ton lots by parties who are known to be other than consumers. So far as can be ascertained, the sales made during the week have not fallen off in price, and all that is being turned out is being shipped as fast as made. For the past few weeks the West appears to have been the best market, so far as prices are concerned, although some large lots have found a market at Eastern ports. A movement is on foot by combined Southern and Northern capital to establish a regular line of steamers to run between Savannah and all the principal Eastern ports, for the express and nearly exclusive purpose of transporting Pig Iron and Iron Ore to these points. Should this be carried out as fully as contemplated, trains will be put on that will run exclusively for this trade, and a very large business is anticipated, which will result in materially reducing the expense of putting Iron and Ore into the hands of the consumers. We note sales of No. 2 Foundry in round lots at $14, net, cash, at furnace bank, and in carload lots at $14.50 @ $15, and of No. 1 at $16 @ $16.50, on a basis of 60 days, at furnace bank.

Bar Iron.—All the Southern mills are running to their utmost capacity at 1.70¢ rate in carload lots. It is selling from stores at 2.50¢ @ 3¢ rates.

Detroit.

WILLIAM F. JARVIS & Co., under date of September 17, report as follows: Analyzing the Pig-Iron market, we should say that by far the most difficult Iron to obtain at ruling prices is Lake Superior Charcoal. Nearly every one reports their stock as well sold up, and advances ranging from 50¢ to $1 ℔ ton above ruling quotations are obtained for particular grades. Next to the scarcity of Lake Superior Charcoal can be placed Gray Forge Iron. The large demands made upon the manufacturers by the Pipe works and rolling mills have forced prices to a very strong basis. Southern Foundry Irons are easy to obtain, and, while no concessions are granted, a strong pressure brought to bear upon these higher grades may be more effective than upon the lower. While the earlier call for Ore from Lake Superior was confined chiefly to the Bessemer mines, non-Bessemer now seems to have the call, but prices are not higher net to the miners than formerly, owing to the advance in Lake freights. At the same time a larger volume of Ore is being shipped weekly now than in 1887, and it is expected that right up to the close of navigation vessel capacity will be used to its fullest extent in carrying ore. This is evidenced already by the majority of the vessels going back from Lake Erie ports light in order to save time and take advantage of the Ore freights as they exist to-day. Altogether the market is very healthy and strong and is fairly quotable to-day as follows:

Lake Superior Charcoal, all numbers	$20.00 @ $20.50
Lake Superior Coke, all ore	19.75 @ 20.25
Lake Superior Coke, cinder mixed	18.50 @ 19.00
Standard Ohio Black Band	19.75 @ 20.25
Southern No. 2	17.75 @ 18.25
Southern Gray Forge	16.25 @ 16.75
Southern Silvery	17.00 @ 17.50
Jackson County (Ohio) Silvery	18.50 @ 19.00
Old Wheels	20.50 @ 21.50

Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave., PITTSBURGH, September 18, 1888.

Pig Iron.—The market has been less active during the past week, and, while prices are still maintained, the feeling prevails on the part of buyers that for the time at least the highest price has been reached. Consumers generally are well stocked. Some of them have covered their requirements for the remainder of the present year, and, having contracted at prices away below those now ruling, it is not strange that they are holding off, especially as there has, as yet, been no corresponding advance in the products. The furnaces are well sold up—many of them have contracts sufficient to absorb all they can make during the remainder of the present year. Therefore, while the market is not as excited as it has been, and there has been little or no change in prices for a couple of weeks, it is in a healthy condition. Thus far, furnacemen, if anything, have the best of it, for notwithstanding the improvement in price there has been but little, if any, cost added to production, while consumers, as already noted, have as yet been unable to get the price for their products up correspondingly. We quote as follows:

Neutral Gray Forge	$15.75 @	$16.50,	cash.
All Ore Mill	17.00 @	17.25,	"
White and Mottled	14.50 @	15.00	"
No. 1 Foundry	17.75 @	18.25,	"
No. 2 Foundry	17.00 @	17.50,	"
No. 3 Foundry	15.75 @	16.25,	"
No. 1 Charcoal Foundry	23.00 @	24.00,	"
Cold Blast Charcoal	25.00 @	28.00,	"
Bessemer Iron	18.00 @	....	"

So far as we can learn there have been no sales of Neutral Gray Forge made above $16.50, cash, and but few at that; most of the sales during the past week were at $16 @ $16.25, cash. In regard to Bessemer we have failed to learn of any sales above $18, cash, and we understand that it can still be obtained at this figure.

Muck Bar.—We continue to quote at $29 @ $29.25, cash, for good strong Neutral. There is not the demand there was a few weeks ago, although there is not much offering. Large buyers for the present appear to be pretty well supplied. However, there is no disposition that we can hear of to make concessions in order to effect sales.

Manufactured Iron.—There is nothing particularly new to note. Manufacturers continue to complain that the raw article is still higher relatively than the products, that as yet they have been unable to get a proportionate advance for the latter. There is a very fair business; the mills are nearly all in operation, some of them working double turn, but, as already intimated, prices are unremunerative and unsatisfactory. We continue to quote upon a basis of 1.80¢ @ 1.85¢ for Bars, 60 days, 2 % off for cash. Mills making a specialty of Skelp Iron are quite busy, and this kind of Iron has been advanced from one to two tenths as compared with the lowest point.

Nails.—The Nail trade does not show much improvement in demand, but prices are better. Makers are now able to realize full card rates, and it is evident that there has been an advance. It could not well be otherwise, in view of the fact that Nail Plate has advanced from $1 to $1.50 ℔ ton and makers could not afford to pay

the advance for Plate and sell Nails below the card. We continue to quote 12d to 40d at $1.90, 60 days, 2 % off for cash.

Wrought-Iron Pipe.—There is a continued good demand, especially for small sizes, and the mills generally are fully employed, some of them working up to their full capacity. Prices have been advanced during the past week. There was no meeting of manufacturers, but the advance was made by telegraph, a mutual agreement having been made by all the mills to adhere to prices quoted. Discounts on Black Butt-Welded Pipe, 55 %; on Galvanized do., 50%; on Black Lap-Welded, 65 %; on Galvanized do., 55 %; ⅛ casing, 40¢ per foot net; 2-inch Tubing, 13¢; Boiler Tubes, 65 % off, large lots.

Old Rails.—There has been but little change in the market during the past week; demand appears to have fallen off somewhat, but offerings continue light. American tees may be quoted at $25, at which figure a sale of 1000 tons was reported. Foreign Tees cannot be laid down in Pittsburgh at the price quoted for American, and while this is the case it is not likely that there will be any sale made of the former in this market.

Steel Rails.—No new business reported here, and prices are nominally unchanged. The new Rail mill of the Duquesne Company will, it is expected, be ready for business about the 1st of January next.

Billets, &c.—Bessemer Steel Billets are still quoted at $29, cash, delivered on cars at maker's works; some makers quote 50¢ @ $1 higher, but very few, if any, sales have been made above price quoted. Nail Slabs also quoted at $29. Sales of Domestic Crop Ends at $19.

Railway Track Supplies.—Prices remain as last quoted: Spikes. 2¢, 30 days, delivered; Splice Bars, 1.80¢ @ 1.85¢; Track Bolts, 2.85¢ with square, and 2.95¢ with Hexagon Nuts.

Old Material.—There is a continued steady demand, and prices are steady as quoted: No. 1 Wrought Scrap, $21, net ton; Car Axles, $26, net ton; Wrought Turnings, $13.50 @ $14; Cast Scrap, $15.50 @ $16, gross; Old Car-Wheels, $20; Cast Borings, $12.50 @ $13, gross.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, } NEW YORK, September 19, 1888. }

American Pig:—The Pig Iron market has not materially altered during the week under review. The opinion is held by some that prices will likely advance but no immediate change is anticipated. In the meantime current quotations are firmly adhered to and there is no disposition shown to shade prices. The volume of trade for the week has been light, most of the dealers reporting only small sales, and, in fact, the sum total of the business thus far this fall has not been of any large proportions. Advices from the West bring very encouraging accounts but though they tend to promote a hopeful feeling in this section there is no actual improvement to note here. A good deal of Iron is being delivered at present on old contracts, but few new orders are being placed. The product of the Southern furnaces is pretty well sold for delivery both East and West and consequently there is little doing in this department. The supplies of Foundry Pig are not large and any considerable increase in demand would bring about scarcity. Prices are as last quoted. The Thomas Iron Co., who report sales of a few thousand tons during the week, continue dry, quote $18 as the price for No. 1 Foun- to other sellers, however, are asking $18.50, and for choice quality $19 is obtained. No. 2 Foundry we continue to quote at $17 @ $17.50 and Gray Forge $15.75 @ $16.25.

Scotch Pig.—The strength exhibited by the foreign market and the rise in the ocean freight rates have stiffened prices here, and as a result but little business is being done. The current imports are of ordinary volume, but stocks here are said to be light. While it is true that a strong feeling pervades the market, there is little actual change to report. Importers are quoting Coltness from $21 to $22; Shotts, $20 @ $20.50; Langloan, $20.50, and Dalmellington, $19.75.

Structural Iron.—The quotations in this department are the same as a week ago. The mills are pretty well employed, and prices, though unchanged, are firm. We quote for round lots, on dock: Sheared Plates, 2¢ @ 2.10¢; Universal Mill Plates, 2.1¢ @ 2.15¢; Angles, 2.1¢ @ 2.15¢; Tees, 2.5¢ @ 2.7¢ and Channels and Beams, 3.3¢.

Plates.—There is nothing new to report concerning this market. Trade is moderately active, and prices are firmly held. We quote for round lots, on dock: Iron Tank, 2¢ @ 2.10¢; Shell, 2.25¢ @ 2.4¢; Steel Tank, 2.25¢ @ 2.3¢; Shell, 2.4¢ @ 2.5¢; Flange, 2.65¢ @ 3¢, and Fire-Box, 3.5¢ @ 4¢.

Steel Rails.—No definite news has been received from England concerning the revival of the International Rail Association. A cable dispatch to one of the daily papers, a few days ago, stated that no agreement had been made, the representatives of the German Rail mills who went to London failing to reach any definite result, but that they would return and resume negotiations next week. On the other hand, it is rumored that the combination had been effected, but, whether or no the rumor is true, it is generally believed that a definite agreement will be reached, and that the present delay is only due to the discussion of details. In the market here there is nothing new to notice. The trade is quiet, and we do not hear of any large contracts being placed. Prices are moderately firm, but the rise in Bessemer Pig has not led to any advance in Rails. We continue to quote $28.50 @ $29 at Eastern mill, though we are told that some small orders have been placed at lower figures. A good many Steel Rails have been sold for delivery next year, aggregating in all something like 200,000 tons.

Old Rails.—The market is very firm and holders are advancing prices. The views of buyers and sellers are, however, so wide apart that actual business is restricted. The lot of 1000 tons of Tees, referred to in our last issue as being offered by the New Haven Railroad, was sold, but the price is not known, though it is rumored that they went at $24. It should be borne in mind, however, that the Rails were to be delivered in New Haven or Bridgeport. The only other important transactions we hear of are 5000 to 7000 tons of Tees by the Boston and Maine Railroad, at $25, for consumption in Massachusetts, and a lot of 2200 tons of Double Heads, 1600 tons of which brought $24.25 and the remainder $24.37½, ex-store, New York. A few small lots of Double Heads are also reported sold at $24.50. There are orders for many thousand tons of Old Rails in the market, but buyers are not disposed to place them at current quotations. But few Rails are being imported and stocks are light, the whole amount in store here being variously estimated at from 7000 to 10,000 tons, all of which are in the hands of a limited number of holders. We quote Tees $25 and Double Heads $26 as sellers' asking price.

Fastenings.—With the advance of the Old-Rail market Fastenings are showing considerable strength, but there are no noticeable changes in price. The market is quoted as follows: Spikes, $2.15 @ $2.20, and Angles, 2.05¢.

Scrap.—There is a very active demand for Scrap, but, as many of the yards are bare of stocks, consumers are experiencing more or less difficulty in obtaining supplies. No. 1 Wrought-Iron Scrap may be quoted at $20 out of yard, and Selected Scrap is bringing $21.

Wire Rods.—The consumptive demand for foreign Wire Rods continues light, and, compared with previous years, the importations are of small volume. Stocks here are scarce. We continue to quote the market at $39.50 @ $39, but for early shipment $40 is the ruling figure.

Financial.

The severe rain storms of the past week have interrupted freight transportation, and disastrous floods in South Carolina, Georgia and other agricultural sections have caused heavy losses on rice and cotton plantations. Bad crop reports from the Northwest caused much excitement on the Produce Exchange on Monday, and despite recent accounts respecting the favorable progress of the harvest wheat and corn both advanced, serving to offset the decline of about 2¢ ₱ bushel since our last report. The Washington weather crop bulletin states that the reports from the corn belt indicate that the weather during the past week was very favorable, and that the corn crop, which is very large, is generally secure and past injury from frost. The frost which occured during the week along the nothern border of Iowa, and in Minnesota, Wisconsin and Michigan, did some damage to crops which were yet immature. Taking all in all the general business situation is good, with the drawbacks noted. Wholesale grocers in this city report that the order trade from the South is at least as good as usual at this time of year, notwithstanding the Florida epidemic. Railways are burdened with freight, especially in the Lake regions, where ore, grain, &c., are being pushed forward with dispatch. On the Canada side there is some preparation in anticipation of the enforcement of retaliatory measures, the idea being to make winter shipments of cargoes via Halifax and St. John's. At Pittsburgh receipts from the lakes are remarkably large, and there is an increased movement of ore, coke and iron. The shut-down in oil will be discontinued November 1. Quite a fleet of English "tramp" steamers now due have been chartered to load cotton at New Orleans at 55/. Railroad earnings for August are increased 2½ % nearly, as compared with last year. The disturbance in trunk-line tariffs continues.

The Stock Exchange markets were much agitated by the unexpected passing of the semi-annual dividend on St. Paul common stock and reducing the rate on preferred from 7 % to 5 %. London selling became general and other stocks were seriously affected. The decline was accelerated by the advance of the Bank of England rate of discount, and an advance from 2½ % to 3½ % by the Bank of France. On Friday following the market continued unsettled and weak, and in the course of three days the average price of 60 stocks declined more than it had advanced during the previous fortnight. Fluctuations were wide and active. Outside of the Granger1s, Missouri Pacific was the chief feature. The weakness was owing to the published report from Denver, afterward denied, that the road is to increase its capital stock by $6,000,000. On Monday the market closed strong. On Tuesday the market opened at a decided advance for St. Paul and the other grangers, and the market was generally strong. On

Wednesday the improvement continued, with Lake Shore at 99¾, the highest in two years.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered	106⅞
U. S. 4½s, 1891, coupon	106⅞
U. S. 4s, 1907, registered	128¾
U. S. 4s, 1907, coupon	129¼
U. S. currency 6s	121

The bank clearings of 38 cities last week show an increase of 3.1 % compared with last year. Outside of New York the increase is 4.8 %. New York gained 8.9; Boston, 1.5; Philadelphia, 11.2; Chicago, 7.7; St. Louis, 14.9; Kansas City, 14.7; Louisville, 9.9; Milwaukee, 7.8; Omaha, 17.3; Denver, 10.5; Peoria, 21.5, and Topeka, 36.9 %. Cincinnati lost 5.8; St. Paul, 2.2; Minneapolis, 6.9; Galveston, 13.6; Memphis, 23.2; Duluth, 7.2, and Norfolk, 11.8 %.

The weekly bank statement showed a gain of about $500,000 in surplus reserve, which is now $12,423,875 in excess of legal requirements, as compared with $3,810,675 a year ago, and $7,682,125 in 1886. The changes in the averages are unusually slight, owing to the fact that the drain of currency to the West and South has been partly counterbalanced by the release of money by the Treasury on account of recent purchases of bonds. As the purchase of bonds on Thursday and Friday was not comprised in the statement, the banks on Saturday night were fully $4,000,000 stronger than represented. The exports of specie from this port during the week were $245,000, and the imports $410,000. Since January 1 the amounts, respectively, are $27,690,000 and $6,440,000.

The money market is gradually hardening, as appears in a perceptible advance in time money as well as discounts. The movement of currency into the interior was heavier than before since the fall demand began to be felt. The rates for time loans were 4 @ 4½ % for four months or less, and 5 % for four to six months on good collateral. Commercial paper was in very full supply, but the demand was light. Rates were quoted 5½ @ 7½ %, according to the grade of paper and the time to run. Confidence was expressed that the policy of the Treasurer in buying bonds, if reasonable prices are named, is adequate to prevent undue stringency. The advance of the minimum rate of discount of the Bank of England to 4 % still further strengthened sight and cable bills. The leading drawers of sterling put up the sight rates to $4.89 and $4.89½, so that quotations were near the gold exporting point, but no outward movement of precious metals is looked for in prospect of liberal exports of cotton and breadstuffs. For the present the high rates of ocean freight operate to restrict shipments within narrow limits.

The preliminary statement by the Bureau of Statistics of the exports of the United States in August shows a decrease of $8,175,983, or 22 per cent., as compared with last year, the falling off having been principally in cotton and breadstuffs, the exports of these two articles having been $8,066,316 smaller than in 1887. Dairy products and hogs show a falling off, but the other items show gains over last year. The following is a comparison of the August exports with those of last year:

	1888.	1887.
Cotton	$2,853,327	$4,562,886
Breadstuffs	12,023,687	18,380,444
Provisions	6,272,184	6,104,309
Cattle	1,453,113	1,230,104
Hogs	400	16,490
Mineral oils	4,676,333	4,384,374
Dairy products	1,620,587	2,376,927
Total	$28,879,631	$37,055,614

The *Chronicle* gives a statement of the cotton crop of the United States for the year ending September 1, 1888. It shows that the total crop reaches 7,017,707 bales, while the exports are 4,638,981 bales, and the spinners' takings are 2,230,294 bales, leaving stock on hand at close of year 181,285 bales. Crop for year 1886–7 showed 6,513,623 bales; 1885–6, 6,550,215 bales.

The imports of merchandise at this port during the week were large, amounting to $10,185,000, of which $2,369,000 represent dry goods. Since January 1, the total is $335,374,000, as compared with $335,348,000 for the same time last year and 311,360,000 in 1886. Exports for the week were $5,371,680: total since January 1, $205,166,000, against $219,398,000 for same time last year.

Coal Market.

The Anthracite Coal trade remains comparatively quiet as respects new orders, but heavy deliveries are in progress under contracts made prior to the last advance, and the activity at the mines is extraordinary. The Wyoming region alone produced upward of 500,000 tons, and the aggregate from the three great mining fields is no less than 935,523 tons, an output for a single week rarely, if ever, surpassed. Compared with the previous week, the increase is 54,000 tons. Since January 1 the aggregate is 25,821,030 tons, an increase of nearly 2,000,000 tons over the same time in 1887. The output for five weeks compares as follows:

Week ended August 18	920,922
Week ended August 25	832,058
Week ended September 1	844,665
Week ended September 8	881,802
Week ended September 15	935,523

It does not yet appear that any considerable amount of business has been done at the advanced prices, but prices are understood to be firm, except for Broken and the smallest steam sizes, which accumulate. For Pea Coal it is said that buyers can make their own terms. Quotations are as follows:

	Broken.	Egg.	Stove.	C'nut.
Hard white ash	$4.15	$4.40	$4.65	$4.55
Free white ash	3.95	4.20	4.65	4.55

Fancy grades range about 4.50¢ @ 4.90¢. The movement of Coal Eastward has been expedited, to take advantage of current rates by small sailing vessels, but the Western demand has fallen off. The chances of lower prices for Coal in October or November, at the furthest, are the subject of discussion. Individual operators feel strongly respecting the alleged preference shown to corporations in supplying cars. At Wilkesbarre several large operators charge the railroads with carrying Bituminous Coal for a less rate than Anthracite, and have engaged legal counsel to appear before the Interstate Commerce Commissioners.

The Bituminous Coal trade is fairly active, with some cutting on the lower grades. The supply as well as the consumption steadily augments in volume. The Philadelphia *Ledger* says: "The extension of the new lines constructed chiefly to feed the Pennsylvania Railroad within the past couple of years has resulted in increasing the tonnage brought to it from the Cumberland region this year 318,000 tons, and from the Broad Top mines 14,773 tons. The Bituminous output from all the other regions has also largely increased. The Clearfield tonnage has increased 32,197 tons. The Pocahontas Flat Top region, which was opened about 1883, has grown to be an important factor in the Soft Coal trade, and already this season 1,070,384 tons have been brought from the mines in that district, an increase of about 300,000 tons. The Beech Creek, the youngest and "most obstreperous" Bituminous Coal road, in which the Vanderbilts are believed to have an interest, has carried to market thus far in 1888 1,161,000 tons, or about 340,000 tons more than it did last year to the same date." The Pennsylvania Road last week transported 217,000 tons of Coal, and during the year 7,976,000 tons, an increase of nearly 900,000 tons compared with 1887. Reading last week shipped 205,000 tons of Coal, of which 43,000 tons were delivered at Port Richmond and 13,000 at Elizabethport.

Imports.

The imports of Iron and Steel, Hardware, &c., at this port from September 7 to September 15, inclusive, and from January 1 to September 15, inclusive, were as follows:

Iron and Steel.

	Sept. 7 to Sept. 15. Tons.	Jan. 1 to Sept. 15. Tons.
Pig Iron: Henderson Bros.	300	1,475
Crocker Bros.	200	8,073
N. S. Bartlett	100	4,200
James Williamson & Co.	100	3,900
Knauth, Nachod & Kuhne	15	15
Spiegeleisen: Dana & Co	1,004	2,403
Naylor & Co.	400	7,219
Crocker Bros.	386	3,907
Post, Martin & Co.	320	320
Geisenheimer & Co.	30	225
Steel: G. Lundberg	100	206½
Naylor & Co	25	583
W. F. Wagner	8	1,091
F. S. Pilditch	6	327
Chas. Hugill	3	215½
R. F. Downing & Co.	3	184½
C. F. Boker	3	178½
Wetherall Bros.	2	7
Temple & Lockwood	2	9
Steel Rods: Naylor & Co.	766	15,521
Cary & Moen	23	683
Steel Sheets: R. F. Downing & Co.	57	60
Pierson & Co.	31	879
Williams & Whitney	29	29
Naylor & Co.	17	490
Lalance & G. Mfg. Co.	15	457
R. Crooks & Co.	10	323
Steel Forgings: Thos. Prosser & Co.	144	3,642½
Steel Crop Ends: Naylor & Co.	580	2,939
Steel Billets: A. Milne & Co.	44	553
J. Abbott & Co	40	1,526
Steel Plates: Naylor & Co.	40½	235½
Steel Nail Rods: J. Abbott & Co.	37	241
Steel Wire: J. Abbott & Co.	12	12
Steel Shafts: Pratt & Whitney Co.	33	33
Sheet Steel: Ogden & Wallace	4	4
C. B. Seabury	2	2
Pierson & Co.	2	2
Iron: J. Abbott & Co.	153	6,816½
Bacon & Co.	172	302
R. F. Downing & Co.	10	115
E. G. Jacobus	1	29
Iron Rods: Bacon & Co.	114	114
Rivet Rods: J. Abbott & Co	582	3,837
Muller, Schall & Co.	52	170
Iron Girders: W. H. Wallace & Co.	16	311
R. F. Downing & Co.	15	409
Sheet Iron: T. B. Coddington & Co.	40	1,078
Iron W. Rods: N. Lilienberg	150	150
Swedish Iron Bars: Naylor & Co.	100	100
Iron Beams: G. W. Sheldon & Co.	128	128
R. F. Downing & Co.	35	201
Merchants' Despatch Co.	18	18
Iron Rings: Thos. Prosser & Son	2	3
Iron Wheels: R. F. Downing & Co.	10	46
Cotton Ties: Naylor & Co	350	4,559
Wheelock & B.	100	250
	Pounds.	Pounds.
Russia Sheet Iron: Bruce & Cook	108,576	108,576
	Tons.	Tons.
Swedish Iron Qivet Rons: C. v. Philp	97	157

Tin Plates.

	Boxes.	Boxes.
Phelps, Dodge & Co.	17,635	393,002
A. A. Thomsen & Co.	8,505	98,277
Dickerson, Van Dusen & Co.	5,572	195,930
Pratt Mfg. Co.	4,273	128,732
N. L. Cort & Co.	3,937	78,976
T. B. Coddington & Co.	3,165	125,478
R. Crooks & Co.	2,873	52,314
Bruce & Cook	2,692	75,382
G. B. Morewood & Co.	2,000	35,689
Jas. Byrne & Son	1,891	28,189
Central Stamping Co.	1,262	25,312
S. Shepard & Co	665	16,318
E. S Wheeler & Co.	624	5,608
Hy. Whittemore & Co.	620	44,105
C. S. Mersick & Co.	514	5,256
Lombard, Ayres & Co.	440	10,712
H. R. Demilt & Co.	387	15,511
Hamilton & M.	362	362
American Metal Co.	208	496
Lalance & G. Mfg. Co.	194	4,004
Merchant & Co.	110	16,722
N. & G. Taylor Co.	85	245

Metals.

	Pounds.	Pounds.
Antimony: Edw. Hill's Sons & Co.	75	1,250
American Metal Company.	50	205
Phelps, Dodge & Co.	30	470

Tin: Naylor & Co.	246,808	1,957,219
Muller, Schall & Co.	224,512	8,345,825
R. Crooks & Co.	172,449	406,082
American Metal Company	145,729	1,136,425
Waltham, Trotter & Co.	44,712	44,712
Hendricks Bros.	21,069	296,761
Lehmaier Sons & Company,	13,886	28,819
Phelps, Dodge & Co.	11,183	1,495,100
Old Brass: Bowering & A.	5,468	5,468

Irons and Metals Warehoused from September 7 to September 15, Inclusive:

	Pounds.
Russia Sheet Iron: A. A. Thomsen & Co.	322,736

Hardware, Machinery, &c.

Barbour Bros. Co., Mch'y. cs., 15
Boker, Hermann & Co., Mdse., cs., 12; Arms, cs., 16
Bernard Geo., Ironwork, cs., 23
Boker, Carl F., Mdse, cs., 18
Budde & Westermann, Hdw., cse., 1
Cobiere, Fellows & Co., Mch'y., cs., 13
Degroun, Aymar & Co., Cables, 10; ditto cks., 8
Field, Alfred & Co., Mdse., cs., 22
Foley, E., Mch'y, cs., 10
Frasse, P. A. & Co., Hdw., cs., 2; Mdse., cse., 1
Gould, R. S., Tubes, cs. 3
Hoe, R. & Co., Mdse., cse , 1
Johnson, John & Co., Mchy., pgs., 44
Lau, J. H. & Co., Arms, cs., 7
Leeming, T. & Co., Enameled Iron Plates, cse., 1
Meacham Arms Co., Mdse., cs , 19
Montgomery & Co., Hdw., bxs., 4
Morris, A. S., Gun Barrels, cse., 1
Pilditch, F. S., Mdse., cs., 196
Schoverling, A., Arms, cs., 38
Shoverling, Daly & Gales, Arms., cs., 11; Hdw., cs., 5
Steglich & Baese, Mch'y., cs., 11
Strauss, L. & Sons., Lanterns, cs., 6
Underhill, A. M. & Co , Guns, cse., 1
Wiebusch & Hilger, Lim. Hdw., cs., 8; Mdse., cs., 6
Witte, John G. & Bro , Cutlery, cs., 5
Order: Steelware, pgs., 360, Mch'y., cs., 4; do., pgs., 28; Cutlery, pgs., 5

Exports of Metals.

	September 7 to Sept. 15. Pounds.	Jan. 1. to Sept. 15. Pounds.
Copper: J. Abbott & Co.	620,000	10,673,619
Lewisohn Bros.	.....	3,929,022
F. A. Lomal	.....	2,581,293
American Metal Company	112,000	5,261,084
G. H. Nichols	.....	223,939
J. Bruce Ismay	.....	112,000
S. Mendel	.....	560,000
Ledoux & Co.	.....	110,276
Muller, Schall & Co.	.....	430,000
Copper Queen Con. M. Company	.....	224,034
J. Kennedy, Tod & Co.	.....	112,026
H. Becker & Co.	.....	1,250
Orford C. & S. Rfg. Company	.....	449,881
Robt. M. Thompson	.....	125,000
Thos. J. Pope, Sons & Co.	85,000	1,007,130
J. Parsons & Co.	.....	206,250
Naylor & Co.	280,000	280,000
Bridgeport Copper Company	.....	112,000
C. Herold	.....	250,000
Phelps Bros.	.....	6,250
R. W. Jones	.....	189,984
Ladenburg, Thalmann & Co.	229,371	229,371
W. H. Crossman & Bro.	.....	4,000
R. Crooks & Co.	1,000	1,000
Copper Matte: Williams & Terhune	.....	34,382,598
Lewisohn Bros.	.....	3,021,610
American Metal Company	.....	2,236,873
J. Abbott & Co.	.....	295,000
C. Ledoux & Co.	.....	485,800
F. W. J. Hurst	.....	184,288
G. H. Nichols	.....	722,777
H. T. Nichols & Co.	.....	180,995
Kunhardt & Co.	.....	41,652
Copper Ore: American Metal Co.	119,000	343,000
	Tons.	Tons.
Pig Iron: P. Wright & Sons	100	280

Metal Market.

Copper.—Since our last week's report spot Chili Bars suddenly dropped in the London market from £95 to £91, but subsequently recovered to £101 and declined to £96 yesterday and to £95 to-day. Futures meanwhile remained unaltered, £79; good, merchantable brands improved from £76 to £76.10. The visible supply in England and France is cabled at 75,474 tons on September 15, against 84,110 on on September 1, but in reality there is improvement as the difference is merely a shipping of stock from France to get money loaned on it somewhere. This temporarily reduces the stock of Chili Bars there, and while this Copper is in transit it looks as though it must have gone into consumption. Such kind of dodges can do the main holders no good, because they deceive nobody who watches things closely over there. Here the market has been pretty much stagnant; at 16¼¢ spot the syndicate sells consumers; to speculators at 17⅛¢; 17.20¢ is the quotation for Sept., and 17.05¢ @ 17.10¢ for the later months. The new Calumet and Hecla vertical shaft is called the Whiting shaft; rock has commenced to be hoisted from No. 3 Calumet shaft. Another vertical shaft to be sunk immediately is to bear the name of the Calumet and Hecla and West shaft; it will be back of No. 4 Calumet; the output in August was 3038 tons; September is expected to produce 500 tons more than August. Rio Tinto rose 1¾ francs at Paris last week. The closing spot quotation is 17⅝¢ @ 17¾¢.

Tin.—London since Wednesday last week gave way with spot Tin from £103. 10/ to £99, and with futures from £104 to £99. 10/, but since then there was a return to the previous high ruling, spot coming £103. 15/ yesterday and £103. 10/ to-day, while futures were £104. 5/ yesterday and came £104 to-day. In a jobbing way Tin is worth here 23¼¢ spot, and 23⅛¢ 30 days, with a very moderate trade, whereas the speculative quotations are 22.55¢ September and 22½¢ October, 23¼¢ being offered on the spot and 23½ asked. Although it is conceded that the statistical position is improving the continual wide fluctuations in London unsettle everything, and the price is now high enough to recommend extreme caution. *Tin Plates.*—There has been a fair demand for them; in fact, all the stock on hand can meet. Certain sizes are exceptionally, nay, abnormally, high; thus, IC and IX 14 x 20 Charcoal advanced about 50¢ ℔ box, and will, of course, recede the moment supplies come in; 14 x 20 Cokes also continue scarce, and command $4.65. The advance noted last week in futures still holds good. We quote at the close, large lines, ℔ box, on the spot: Siemens-Martin Steel, Charcoal finish, $5.25 @ $5.75; Coke finish, $4.75; Ternes, $4.30 @ $4.40; Bessemer Cokes, $4.65, and Wasters, $4.30. Cokes remain 14/ in Liverpool.

Lead.—Hardly anything has transpired in the way of sales outside of the exchange, only carloads changing hands at 4.95¢ @ 5¢. The bull clique of speculators now hold 20,000 tons, having again bought some 2000 tons on change at 4.95¢ and 4.97½¢ September and October. Latterly, it is thought, the speculative holders have evinced some weakness. In St. Louis and Chicago the price is 4.70¢ October. A leading Cologne (Prussia) paper asserts, under date September 3, that the obstacles that stood in the way of getting the Spanish Lead mines to join the convention have been happily removed; as this is, however, not confirmed from other important sources thus far, it will be safer to await further developments. Soft Spanish rose in London from £13 15/ to £14. On change 32,500 lb October Lead fetched 4.97½¢.

Spelter.—The market in New York has been dull, because there is no stock, but in Pittsburgh 5½¢ has been paid for Common Domestic, which would be equal to 5½¢ here. It is expected that the next sale effected in this city will be at 5½¢. Blende is now paid $30 per ton at the West. Silesian also improved still further in London to £18.15/, which would be equal to 5.85¢ laid down in New York, the nominal quotation for good brands at New York is 5.85¢ @ 5.87½¢.

Antimony.—Has been quiet but steady at 10¢ Hallett and 12¾ @ 13¢ Cookson.

New York Metal Exchange.

The following sales are reported:

THURSDAY, September 13.

164 tons Lead, September	4.97½¢
144 tons Lead, September	4.95 ¢
48 tons Lead, September	4.92½¢
16 tons Lead, October	4.95 ¢
16 tons Lead, spot	4.95 ¢
40 tons Tin, spot	22.75 ¢
50 tons Tin, October	22.20 ¢
10 tons Tin, October	22.30 ¢

FRIDAY, September 14.

116 tons Lead, October	4.97½¢
128 tons Lead, October	4.95 ¢

SATURDAY, September 15.

100 tons Lead, October	4.97½¢
48 tons Lead, October	4.95 ¢

MONDAY, September 17.

1156 tons Lead, October	4.95 ¢
164 tons Lead, October	4.97½¢
16 tons Lead, October	4.92½¢
16 tons Spelter, October	4.95 ¢

TUESDAY, September 18.

48 tons Lead, October	4.97½¢

WEDNESDAY, September 19.

16 tons Lead, October	4.97½¢
100 tons Lead, October	4.95¢

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, Sept. 19, 1888.

The course of the market during the past week and the plan of action followed by the parties who have been most conspicuous in the trading strengthen the previous belief that block Tin is virtually controlled by French operators. Just who the principals are is a matter of conjecture, so cleverly are their tracks covered; but the impression obtains that operators interested in Copper take more than passing interest in the Tin speculation. The irregular movement of prices, with sharp advances immediately after evidences of "short" selling, strengthen that belief in no small degree, and speculators and consumers alike seem to consider that a further rise is more than probable.

Chili Bar prompts have reacted sharply, owing in a great measure to settlements having been made privately by operators who had deliveries to make on contracts expiring this month. The highest price paid was £106. From that point a reaction to £90 took place, followed subsequently by a rise of £3, futures meanwhile remaining almost stationary. It is stated that the squeeze was carried through for the purpose of effectually putting a check upon outside "bear" operations, and also that, while the latter have lost heavily, the purchases necessary to force prices up have cut the net profit on the movement down to a comparatively small sum. It is estimated that the "short" interest on which deliveries fell due this month aggregated 10,000 tons, a great portion of which was covered early in the month. It is also calculated that the deliveries due on contracts expiring next month involve the greater portion of 15,000 tons. The French operators have figured to no remarkable extent in the trading the past week, and it is believed that it is their object to force private settlements of the "short" sales on which deliveries are due next month.

The statement comes from a presumably well informed source that the Société des Métaux is well satisfied with the financial results of their operations between producers and consumers, and that existing contracts will be renewed for a further period of three years, providing the mining companies are agreeable.

Copper furnace material continues very firm, but the transactions that can be traced out suggest very cautious buying by consumers. Among sales the past fortnight, Messrs. James Lewis & Sons' circular notes 200 tons Anaconda Matte at 15/ ℔ unit, at Liverpool.

Tin Plates have been more active this week than last. The market is unmistak-

ably strong, but prices are somewhat irregular, both makers and buyers being influenced to greater or less extent by the course of the market for Block Tin.

The Treforest Works management are doubling their output and erecting a new mill. They now have seven mills in active operation.

The iron "warrant" market has received no small degree of support from outside speculative buying orders, the latter being encouraged by reports of continued active home demand and more or less extensive orders from America. Makers' brands of Scotch are again higher, as are also Middlesboro' and Bessemer products, the demand for which continues active.

In Manufactured Iron there continues to be a brisk business at firm prices, and most of the Steel branches are showing increased activity. Prices are higher on Rails, Blooms, Billets and Slabs, but unchanged on Wire Rods. Spiegeleisen is firmer and more active.

The failure is announced of Bennet Brothers, Liverpool, with liabilities of £25,000.

Scotch Pig.—The market has continued active and strong, with prices 6d to 2/ higher.

No. 1 Coltness,	f.o.b.	Glasgow	51/
No. 1 Summerlee,	"	"	53/
No. 1 Gartsherrie,	"	"	48/
No. 1 Langloan,	"	"	50/
No. 1 Carnbroe,	"	"	44/
No. 1 Shotts,	"	at Leith	49/
No. 1 Glengarnock,	"	Ardrossan	47/
No. 1 Dalmellington,	"	"	43/6
No. 1 Eglinton,	"	"	42/6

Steamer freights, Glasgow to New York, 10/ Liverpool to New York, 10/.

Cleveland Pig.—There is still a brisk trade and the market retains a strong tone. No. 1 Middlesboro', G.M.B., 37/6; No. 3 do., 35/3.

Bessemer Pig.—Business has been on a large scale and prices are again higher. West Coast brands, mixed numbers, 46/, f.o.b. shipping point.

Spiegeleisen.—Demand is more active, and the market firmer. English 20 % quoted 77/6, f.o.b. N. W. England shipping point.

Steel Rails.—There is a brisk demand, and prices are higher at all points. Standard sections quoted at £4. 2/6, f.o.b. at N. W. England shipping point.

Steel Blooms.—In these there is a fairly active business, with prices firm and higher. We quote £4 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Transactions have been on a large scale, and the market is strong. Bessemer, 2½ x 2½ inch, £4. 1/3, f.o.b. at N. W. England shipping point.

Steel Wire Rods.—The market remains quiet and unchanged. Mild Steel No. 6 quoted at £5. 18/9 and No. 5 at £5. 17/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—Only a moderate trade, but prices very firm. Bessemer, £4, f.o.b. at N. W. England shipping point.

Old Rails.—Not much demand, but holders very firm. Tees quoted at £2. 17/6, and Double Heads £3, f.o.b.

Scrap Iron.—There is a moderate business at steady prices. Heavy Wrought quoted at £2. 7/6 @ £2. 10/, f.o.b.

Crop Ends.—Demand moderate, and prices unchanged. Bessemer quoted £2. 7/6 @ £2. 10/, f.o.b.

Tin Plate.—Business is of liberal volume, and the market strong. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade	15/3 @ 15/9
IC Bessemer steel, Coke finish	13/9 @ 14/
IC Siemens " " "	14/ @ 14/3
IC Coke, B. V. grade	13/6 @ 13/9
Charcoal Terne, Dean grade	13/ @ 13/6

Manufactured Iron.—There is an active trade all through and prices are strong. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Ord. Marked Bars	....			@	7	12	6
" Common "	....			@	5	0	0
" Bl'k Sheet, singles	....			@	7	0	0
Welsh Bars (f.o.b. Wales)	....			@	4	17	6

Tin.—The market rather quieter. Straits quoted at £103. 10/, spot, and £104 for three months' futures.

Copper.—Spot market very irregular, futures steady. Chili Bars, £90. 5/, spot, and £78. 10/ three months' futures. Best Selected, £79.

Lead.—Market very slow and rather weak. Soft Spanish, £13. 15/.

Spelter.—There is still a good demand, and prices are firm. Silesian, ordinary, £18. 15/.

The decline of steamboating on the Upper Mississippi River, the Missouri and their tributaries is so rapid that navigation within a few years will be wholly abandoned in the Mississippi above its confluence with the Ohio, save by barges and the lumbering traffic. Within about 20 years the wharves at St. Louis were jammed with steamers doing a prosperous trade, whereas to-day scarcely half a dozen in actual business can be seen along the entire river front. The low rates for merchandise and the fast time made by railroads have destroyed all competition. Among the southbound boats the Tennessee River trade has suffered in the general decline. Even the barge line to New Orleans, which brought to the interior heavy importations of foreign goods, has not half the traffic that it enjoyed a year ago, and warehouses on the river are being converted to other uses.

The new shops for the Canadian Pacific Railway, now being built at Montreal, include a passenger car shop, 400 feet in diameter and two stories high; a wood machinery shop, 400 x 100 feet, also two stories high; a blacksmiths' and machine shop, 300 x 100 feet; a storeroom, 350 x 90 feet, two stories high, and a foundry, 150 x 100 feet. The buildings are of brick and stone and estimated to cost $300,000.

A large electric light and power installation is about to be erected at Toulouse. The requisite power will in the first place be derived from water motors, the site of which is in the center of the town. The fall available will furnish 2000 horse-power.

Tacoma, the future city of the Puget Sound country, is remarkable for its steady growth. The permanent character of its buildings and improvements of all kinds impresses a stranger with an idea of its great future. With one of the finest harbors on the entire coast, the cheapness and celerity with which cargoes are handled make it of great attraction to foreigners. The largest vessel may lie along the docks, and discharge its cargo at a minimum cost. The lumber interest of Puget Sound is growing rapidly. Vessels are constantly loading at its docks for South America, China, Australia and California. As the waters are always still no difficulty is experienced in transporting logs in rafts to any point that may be desired. In one day at Tacoma 14 ocean sailing vessels and 23 steamers were registered. The Northern Pacific has opened up a vast area of country, and it is promoting the interest and welfare of the people along the line across the continent. Vancouver, the terminus of the Northern Pacific Railroad, is actively competing for the tea trade with Japan. The Canadian Pacific steamer Parthia, from Vancouver August 1, made the shortest outward run on record between the Pacific coast and Japan, being but a few hours over 13 days. The silk and tea ex-Abyssinia, from Yokohama, at Vancouver, were delivered at New York in 10 and 14 days respectively. The Aberdeen, at Vancouver, 15 days from Yokohama, delivered its silk in New York in 9 days, and teas in 13 days from the Pacific coast.

Artificial Irrigation.

Artificial irrigation is recovering for agricultural purposes a large expanse of arid territory in Arizona and New Mexico hertofore regarded as worthless, and capital in large amounts is finding profitable investment in irrigation enterprises. The valleys of the Salt and the Gila Rivers have at least 2,000,000 acres of land that can be readily irrigated, and with the adoption of new systems of distribution and of storing and economizing water it is probable that that area can be at least doubled. The methods at present in vogue are wasteful, for the supply is so abundant that there is little need of economizing it. The work of developing the supply is going on rapidly, but nowhere near the extent, it is evident, to which it will soon be taken in hand. At present there are in the valley of the Solado something like eight main canals, having an aggregate length of 160 miles, and built at a cost of something like $1,000,000. These have a capacity of irrigating something like 200,000 acres under the present system, but their irrigating capability could be much increased by the exercise of due economy. The Arizona canal is the chief of these enterprises. It has a length of 41 miles, and 120,000 acres of land will be ultimately tributary to it when all is brought under cultivation. In most of these canals the ownership is in what is called "water-rights." The canal is built by a company, each member of which has so many rights, according to the amount of his investment. A water-right entitles the possessor to the use of a given quantity of water from the canal. In most cases it is the constant use of 100 inches, which is considered sufficient to irrigate a quarter-section or 160 acres. Instances are mentioned where a single company have received as much as $1,000,000 from the sale of water-rights, besides an income from the tolls. Both Arizona and New Mexico are exceptionally favored in having a large proportion of their area composed of a conjunction of mountain groups with broad plain-like valleys. It is believed that enough of these valleys will be found to be irrigable by damming up the beds of torrents at the feet of the mountains to make both Arizona and New Mexico two of the richest agricultural States in the Union.

A valuable relic of the Kearsage is preserved at the Mare Island Navy Yard—namely, the figure-head of the famous vessel erected on a handsome pedestal. An inclosure has been formed with dismounted cannon and chains, and on this is a flagstaff, from which floats the stars and stripes. The American *Army and Navy Journal* says this is guarded by mounted fieldpieces and close beside it stands the figure-head.

It is reported from Paris that the French Government will probably remove the import duty from cereals, on account of inadequate harvests.

Hardware.

Trade continues in a satisfactory condition, with a steady demand embracing general assortments of miscellaneous Hardware, with a good share of seasonable goods. Prices generally are without important change, the tone of the market continuing moderately firm, a few lines showing a tendency to stiffen, while others are without change, or, in a few instances, slightly weaker. Manufacturers are generally well supplied with orders, and, in some instances, are on this account less desirous of selling goods and are withdrawing some of their extreme quotations.

Cut Nails.

A very fair volume of trade is being done and most of the Eastern mills are running full. Stocks are comparatively light. Though there has been no quotable advance in the price of Nails the general improvement in the Iron trade has a favorable influence and tends to keep current quotations firm. We continue to quote $1.85 to $1.90 for carload lots on dock. We are advised by telegraph that a special meeting of the Western Cut Nail manufacturers was held at Pittsburgh Tuesday the 18th inst., with a fair attendance, 18 firms being represented. A pooling plan was submitted, but no action was taken on it. The $2 card was reaffirmed. It was reported that the demand for Nails had slightly improved.

Wire Nails.

Manufacturers are reported to be adhering to the new prices, thus giving the market a firm tone. Some Nails purchased prior to the advance are, however, offered by holders at a slight concession.

Barb Wire.

In pursuance of a call issued by the Executive Committee, appointed at a previous meeting, a meeting of the manufacturers of Barb Wire was held in the Tremont House, Chicago, on Wednesday, the 12th inst., at 2 p. m. Upward of 20 were present, representing some 120,000 tons of the 150,000 tons estimated annual production. The meeting was one of the most harmonious in the history of the organization. Full reports were given by Mr. Washburn, of the Washburn & Moen Mfg. Company, as to the present status of the litigation against the manufacturers of unlicensed Barb Wire. It was freely conceded that the prices at which Barb Wire is now being sold are very unremunerative. The discussion which followed resulted in the unanimous adoption of a plan which, it is confidently anticipated, will result, when carried out, in placing the business on a very satisfactory basis. It was expected that another meeting would be called within 10 days, during which interval it would be possible to hear from every manufacturer in the country, and if the co-operation of all who were not present at this meeting was obtained, the result aimed at would be accomplished. H. B. Cragin, of the Washburn & Moen Mfg. Company, was chairman of the meeting, and G. W. Henry, of Joliet, was secretary.

There is little change in the condition of the market in this city, the price of 4 cents for carload lots being almost entirely nominal and shaded freely. The demand, however, is quite limited, though the outlook for the trade of the coming season is regarded as satisfactory.

Miscellaneous Prices.

There is a reaction from the extremely demoralized prices which have prevailed in Wrought-Iron Pipe. For different reasons some of the mills have withdrawn from the market and a more conservative disposition prevails among those who are still in the field. As a result prices are somewhat firmer than heretofore, and there is a pretty general agreement on advanced prices, such as the following:

	Discount per cent.
¼-inch and smaller Black Pipe	55
⅜-inch and larger Black Pipe	65
¼-inch and smaller Galvanized Pipe	47½
⅜-inch and larger Galvanized Pipe	55
¼-inch and smaller Tarred Pipe	55
⅜-inch and larger Tarred Pipe	65
Well Casing, all sizes	60
Lap-Welded Charcoal Iron Tubes	65
Lap-Welded Steel Boiler Tubes	60

When the Screw manufacturers agreed in 1886 to discontinue their ruthless slaughtering of prices, and adopted measures calculated to secure greater steadiness in the trade, one of the most prominent and experienced of their number predicted that it would be two years before the real influence of their action would be felt. He reasoned from his knowledge of stocks in the hands of jobbers and from his understanding as to contracts for Screws which were yet to be filled. His prediction was borne out by the fact that for a long time prices continued weak, notwithstanding the undoubted good faith which the manufacturers kept with one another. Their discount to jobbers was 70, 10 and 5, but the jobbers were able to beat this price in numerous transactions, and to capture trade which should, from its magnitude, have gone to the manufacturers. One large transaction is known to have been made in the West in the past year at 80 and 2½, by a jobber, notwithstanding the steady maintenance of manufacturers' prices at 70, 10 and 5. The verification of the prediction now seems to have occurred. Since July the price of Screws has been hardening, and manufacturers have at last secured control of the market. Jobbers who once were able to secure an extra 10 or an extra 5 without difficulty find themselves confronted with the necessity of paying the regular price for such stock as they need. They ask for 5 per cent., and even express a willingness to take 2½ per cent. if they can get no more, but as far as can be learned the manufacturers are generally firm in their fixed rates. The bareness of stock in second hands is shown by the increased inquiries now being received by manufacturers and by the larger sales which they are now making. The opinion is freely expressed that manufacturers could easily put up their prices to 65 per cent. discount if they felt so disposed, as their organization is understood to be a strong one. But in view of the impression which prevails in the trade, that the goods are already very high, and the dissatisfaction with which an advance would be received, the companies have simply maintained their old prices.

The market for Steel and Wire Goods remains as at our last report—in excellent condition—and with a good prospect for the coming season. The understanding reached by the manufacturers seems to be working satisfactorily, and, as far as present indications go, the prospect for its continuance during the coming year is good. It is to be noted, while there has been no change in the discounts on Steel Goods, that in view of the recent advance in the price of Steel the ruling prices on these goods are lower, comparatively, than last year. The discount on the goods is, in fact, the same as it was when stock cost nearly 20 per cent. less than at present, and, on this account, it would not surprise the trade if an advance in price were made.

Jersey City Smelting Works, Jersey City, N. J., in view of the advances in Metals, announce, under date September 12, the following advanced prices for their standard grades of Babbitt Metals. The terms are, on orders of 500 pounds or over, 60 days' acceptance, or 1½ per cent. discount for cash in ten days; less than that amount, 30 days, net, f.o.b. Jersey City or New York City:

	Per pound.
Star	5½ cents.
No. 4	9¾ cents.
No. 2A	13¾ cents.
A	21¼ cents.
Diamond	23½ cents.
Star and Crescent	8 cents.
No. 3	11¼ cents.
No. 1A	16½ cents.
Genuine	21⅞ cents.
Extra No. 1	24 cents.

The Penn Hardware Company, Reading, Pa., are making the Penn Apple Parer, Corer and Slicer, and the Perfection Apple Parer, Corer and Slicer, on which they quote to the general trade $4 per dozen.

E. C. Meacham Arms Company, St. Louis, Mo., have recently issued a postal, in which they offer special low prices on some lines of Ammunition unsaleable in that market, and make also quotations on other goods.

The Nubian Iron Enamel Company, Chicago, Ill., issue a small pamphlet devoted to a description of their Iron Enamel, giving a number of testimonials in regard to its merits, among which we observe letters from a number of well-known Hardware houses. Their quotations are as follows:

Bonnell's Nubian Iron Enamel, per dozen	$2.00
Bonnell's Liquid Stove Polish, per gross	9.00
Bonnell's Paste Stove Polish, per gross	6.00
Bonnell's Benzine Stove Paste Polish, in 5-pound pails, per pound	.13
Bonnell's Water Paste Stove Polish, per pound	.13

The following are the discounts of L. S. Starrett, Athol, Mass., on the line of fine Mechanics' Tools of which he is the manufacturer:

	Discount.
Spring Calipers and Dividers	25&10&10
Squares	25&10
Protractors	25&10
Rules and Straight Edges, Steel	25&10
Lock Joint Calipers and Dividers	25&10
Combination Dividers	25&10
Trammel Points	25&10
Surface Gauges	25&10
Screw Pitch Gauges	25&10
Micrometer Caliper Squares	25
Universal Beval Protractors	25
Center Gauges	25&10
Scratch Gauges, Steel	25&10

Bright Wire Goods are in an exceedingly demoralized condition, and are probably now selling at lower prices than have ever heretofore prevailed. The competition between the manufacturers is active, and nearly all of them unite in making the low prices.

The prices of Chain show a tendency toward slightly higher quotations, which takes the form rather of a withdrawal of exceptional prices than the announcement of new prices. This remark applies to both Fancy and Coil Chains.

The Wire market is firmer than it has been, and a slight advance in price has in some cases been made.

The slight advance recently made in the price of Common Carriage Bolts, by which the discount was made 75 and 2½ per cent. instead of 75 and 5 per cent. as heretofore, with the usual cash discount of 2 per cent., is reported to be generally adhered to.

The situation in Ammunition remains unchanged. A great many goods are being marketed, the trade, however, buying only for their immediate wants, recognizing that the present condition of the market is somewhat unsettled and feeling uncertain as to what further developments may be. The houses which are not in contract with the association, and are selling goods at irregular prices, are understood to have little difficulty in obtaining

Cartridges, and the effect of the irregular quotations which they are making is something of an obstacle in the way of the business of the houses which are maintaining the prices of the association.

Under date September 23, owing to an advance in the price of Lead, the following revised quotations on Shot were announced, there being the usual discount of 2 cents per 25-pound bag if paid within five days from receipt of bill:

Drop Shot, per 25-pound bag	$1.45
Drop Shot, per 5-pound bag	.34
Buck and Chilled, per 25-pound bag	1.70
Buck and Chilled, per 5-pound bag	.39

Trade.

The following report of the Louisville market, which comes under date September 15, will be of interest:

The Hardware trade of Louisville, Ky., continues good, showing no diminution in quantities of goods going out. Prices hold their own well. Manufacturers seem to study the requirements of the jobbers and cater to their wants more than ever, recognizing in them the best distributers of their products. Except in a few unlooked-for advances, particularly on goods that were selling at losses, some factories prepared the dealers for higher prices, allowing them time to secure a limited stock. This is appreciated by the jobbers, who remember the action in their future orders. It also gives them confidence and an opportunity to realize a moderate profit on their purchases. Bar and Sheet Irons are rather scant in stock, as the demand from store is good and the mills rather slow in filling orders, many being oversold, particularly on Sheets.

Wire Nails are firmly held, most mills having full contracts, and the good specifications going in show that their place in the trade is being enlarged. Cut Nails have also held firm, with one pointed exception. Dealers apprehend another advance at the meeting on the 18th, but are afraid to further increase their holdings. They also apprehend that at a moment's notice the pool will be sprung on them. Many favor this plan, while others deprecate it, preferring an open market and running the risk of cut-throat prices, other than have a given profit allotted them. Barbed Wire has been a speculative feature during the week. Some mills that were well secured on orders withdrew the lowest prices, which caused an agreeable movement to those mills who were willing to take a few cars more. They have all ordered an advance and will probably hold to it, and at an early day the nominal association will probably be fixed up. This staple article has had an unprecedented run this season, owing to both low prices and increased consumption. Plain Wire is still low, with prospect of early advances.

There never was such a large trade in Agricultural Machinery and Implements, particularly Grain Drills, which, together with the enormous amount of fertilizers going into the country, show that the present good crops only stimulate the farmers to plant more heavily for next season. The large fruit crop causes an extraordinary rush on dealers and manufacturers for machinery to grind and press it into marketable shapes The yellow fever scourge, in Florida, is badly affecting trade in the lower cotton States reached by Louisville jobbing houses, causing utter stagnation in certain localities that are panicky. Otherwise the general trade has improved over last week. The city is still crowded with visitors, brought here by the attractions of the fall celebration, which are interestingly managed. During the week magnificent fruit and flower displays were carried on and one night a splendid flambeau parade literally filled the city to overflowing. All of the principal streets are still decorated by day and illuminated by night, arches of colored lights spanning every street crossing.

The Wells & Nellegar Company, 72–76 Lake street, Chicago, have issued an illustrated Wholesale Price Current of Cutlery, Sporting Goods and General Hardware, under date of the 11th inst. In their review of the markets on the first page they say:

Hardware.—The demand for Hardware during the recent summer months has been larger than ever before, and orders have been for general assortment goods, showing conclusively that stocks throughout the West are light, and that the large harvest already assured has stimulated trade to such an extent that the universal cry will be of a scarcity of goods, as we are already experiencing difficulty in getting our orders filled with some lines of goods as fast as the trade wants them. We are candid in our opinion that firm and higher prices are sure to follow.

For a time we attributed our largely increasing trade to the many customers who came to us about the time of our purchase of the Keith, Benham & Dezendorf stock, but as there seems to be no let-up to our growing trade, we cannot but feel that the demands of the country are growing correspondingly.

Nails.—Steel Cut Nails are very firm at an advance price of 15c. which occured on the 30th. Wire Nails have also advanced 20c. per keg, and we expect both Cut and Wire Nails will be still higher.

Sheet Iron is also higher owing to advances in raw material, which is having its effect upon other lines of goods. Sheet Iron, besides being $4 per ton higher, is very difficult to obtain from the mills, and we suggest to all customers to cover their wants on all heavy goods without further delay.

The circular consists of 16 large pages, covering a variety of goods.

Items.

Boston and Lockport Block Company, Lockport, N. Y., have been increasing their facilities for the manufacture of Snow Shovels and have also added two new styles to their line, the Star and the Eclipse. Their announcement relating to these goods will be observed on page 33.

The Ludlow-Saylor Wire Company, St. Louis, Mo., have taken the agency for the Hartman Patent Picket Fence, which is referred to as having a large sale.

The display made by the Kelly Axe Mfg. Company was a conspicuous feature of the industrial parade at Louisville, Ky., on the 5th inst. A float supported an Axe 20 feet high, which shone like silver, and was followed by a company of 250 employees, all dressed in a neat uniform, and each bearing on his shoulder a brand new Axe, glistening in the rays of the sun.

The Rector & Wilhelmy Company, Omaha, Neb., issue a price current devoted to seasonable goods, including Stove Boards, Elbows, Coal Hods, Fire Arms, Huskers, Meat Choppers, Lanterns, Apple Parers, Axes and many other goods. Quotations are given in cipher, to which a key is furnished.

Butts & Ordway, 145 and 147 Pearl street, Boston, Mass., in their price list, No. 1, represent a line of Nuts, Washers, Screws, Drills, &c. The pamphlet is illustrated and clearly printed, and will be appreciated by the trade as giving the standard lists in convenient form.

On page 75 is the advertisement of Frost's Anti-Rattler. At a glance it will be seen what a wide range its sale has in the United States, and in addition we are advised that they are exported to New Brunswick, Canada, England, Australia and New Zealand. Their popularity is also referred to as constantly increasing.

Hibbard, Spencer, Bartlett & Co., of Chicago, and Simmons Hardware Company, of St. Louis, have each issued very complete catalogues of Rochester lamps. Illustrations and price lists of the various styles are given, embracing parlor, study, fount, piano, bouquet, mammoth, wall and stand lamps. These illustrations not only convey an excellent idea of the different kinds of Lamps belonging to this line, but they also show the artistic finish which embellishes the finer grades.

Hibbard, Spencer, Bartlett & Co., Chicago, have issued another catalogue this month, covering a great variety of seasonable goods, including Tin Plates, Sheet Iron, Metals, Stove Boards, Elbows, Coal Hods, Stove Shovels, Fire Irons and Stands, Stove-Cover Lifters, Coal Vases, Husking Pins, Meat Choppers, Grain Scoops, &c.

The Central Expanded Metal Company, 116 Water street, Pittsburgh, Pa., have issued an attractive pamphlet which is devoted to an exposition of their manufactures under the patents of J. F. Golding. It represents a line of Steel Lathing and Netting for fences, gates, window and skylight guards, elevator shafts, &c. Our readers will remember that in a recent issue we gave a description of this new line of goods, and the pamphlet in hand illustrates the uses to which the principle is applied. A number of full-size illustrations are given, showing the different meshes in which the Expanded Metal is furnished, with other illustrations showing in detail the manufactured articles in which it is used. The pamphlet is fully illustrated and gives information in regard to the process of manufacture and the advantages possessed by the product, which will be of interest to many in the trade.

The Schreiber & Conchar Mfg. Company, Dubuque, Iowa, issue a circular which they designate The Silent Traveler, in which they illustrate their Barn Door Hangers, Cylinder Heads, Registers and other goods of their manufacture.

The Winona Wagon Company, Winona, Minn., issue an attractive colored circular relating especially to the Rushford Wagon, calling attention also to their line of Farm and Spring Wagons, Drays, &c.

The Iowa Farming Tool Company, Fort Madison, Iowa, are at present at work on their annual catalogue, and it is expected that it will soon be issued.

A. H. Fisher, representing the Coburn Trolley Track Mfg. Company, Holyoke, Mass., manufacturers of a new Movable Ladder for stores, has opened an office at 131 Duane street, New York.

Haydock & Bissell announce, September 25, 26 and 27, a large sale of Table and Pocket Cutlery, Carvers, Butcher Knives, Plated Flatware, Shears and Scissors, &c., at 12 Murray street, New York. Particulars are given in their advertisement on page 51.

Chas. Elterich, 193 Worth street, New York, announces that hereafter all the goods manufactured and sold by him of his design, invention and patent will bear this trade-mark:

which has been registered, and will be duly stamped on such goods, and where space permits "Elterich" or "C. E." will also be stamped in connection with the trade-mark. The line of goods to which this announcement refers are Taps, Dies, Tap Wrenches, Die Holders, Cutters, &c.

Obituary.

The Sweet & Clark Mfg. Company, Troy, N. Y., make an appropriate announcement of the death of Miles Sweet, who was held in high esteem for his personal worth and the qualities which command the respect of those who knew him. The company announce his death in the following terms:

It is with regret, in which we trust you wil share, that we have to announce the death of the senior partner of this firm, Mr. Miles Sweet. Mr. Sweet died this day at his home in this city, aged 61 years. The sincere sorrow of all who knew him preves his worth as a man, and more fitly testifies than can any words of ours to the great esteem in which he was held.

Trade Topics.

We have received the following communication from a Hardware house in this State. It relates, it will be observed, to the condition of things in the Stove trade and the difficulties which dealers in some sections are encountering:

The time has come for dealers to be looking after their Stoves for the fall trade. The subject is attended with a good degree of concern, inasmuch as competition on Stoves is going beyond all reason.

Consumers as a rule, maintain with zeal that Stoves, both for wood and coal, are decidedly

too high—that manufacturers are in a combination, and are holding prices to suit themselves, which means a greater profit than the times justify. With these views many only propose to buy when forced to by sheer necessity; and then not till they have canvassed the county they live in for the very best price. Now comes the most annoying experience a man can have in business. Some Stove manufacturers will sell their Stoves to a general agent, granting him large territories to wholesale and retail their goods in. The result is, said agent opens a retail store at one's county seat, and, sly as the nephew of Satan, tampers with all he meets there, filling them with prices, and styling himself "the Stove king," who can undersell all others, because he gets his at the general agent's prices, which are way below what an ordinary dealer has to pay. If the customer does not warm up and begin to buzz at once, he says, "Strange enough, sir, that I cannot do better than your merchant at home, when, in fact, I sell him all the goods he handles in our line; and now, sir, as a special inducement to you to buy of me, if you will come here and select a Stove or Range you can have the same terms he gets, provided only you will not give me away to him. Of course this is a special, confidential offer to you; but if any of your friends want a Stove you just send them over to me."

It is wonderful how haughty this man will be when he meets his home merchant, perhaps the next day. He will look about the Stove room and make elaborate inquiries how such a Stove works, but when urged to buy he remarks: "I can buy that Stove as cheaply as you can, and cheaper than you can afford to, for I can go and get it myself, and you have to pay the freight on yours." The dealer has no more to say if he knows the man is truthful and honest, but very naturally prays that he will have to do business with his general agent in heaven. This condition of things has annoyed retail Stove dealers about long enough, and it is about time they sought out some scheme to operate in self defense. The only remedy the writer can offer at present is for merchants to refuse, in a body, to handle such Stoves, directly from the makers or indirectly through such an agency, until the above complained of nuisance is abated. It is time this subject was discussed and agitated, for the evil is growing apace, and in certain localities threatens to ruin the Stove trade. It is suggested and hoped that some one who has experienced the same evil will consider the matter more fully for the benefit of the readers of *The Iron Age*. Let us hear from others and have a proposition suggested to be put in force in the near future.

Exports to New South Wales.

The increasing trade which American manufacturers are having with New South Wales is indicated in the following abstract, which shows some of the leading goods in Hardware and related lines which were taken to that market in a single vessel:

PER BRIG PATRICIAN, AUGUST 21, FOR SIDNEY, N. S. W.

By W. H. Crossman & Bro.—15 boxes Carpenters' Tools, 1 gross Traps, 1 case Hardware, 2 cases Carpenters' Tools, 22 Guns, 1 case Tools, 50,000 Primers, 50,000 Cartridges, 3 dozen Molds, 6 dozen Brooms, 1 case Hardware, 39 Lawn Mowers, 18 dozen Lanterns, 4 cases Sad Irons, 50 cases Slates, 1 case Toys, 31 Velocipedes, 1 case Stove Parts, 3 sets Tools, 3 dozen Braces, 3 dozen Scales, 1 package Hardware, ½ gross Lemon Squeezers, 24 dozen Traps, 1 case Hardware, 6 dozen Mattocks, 1 case Hardware, 3 dozen Traps, 3 gross Grease, 4 dozen Scales, 4 cases Hardware, 11 dozen Cages, 2 cases Hardware, 1 case Carpenters' Tools, 12 dozen Bench Screws, 20 gross Traps, 2 cases Harness, 475 feet Leather, 7 dozen Axes, 4 dozen Hatchets, 6 Revolvers, 150 shells, 13 cases Hardware, 1 gross Lemon Squeezers, 10 dozen braces, 33 Stoves, 2 dozen Wringers, 7 cases Carpenters' Tools, 100 dozen Shovels, 6 dozen Traps, 6 dozen Mattocks, 18 dozen Hammers, 5 dozen Axes, 2 Scales, 20 Guns, 33 sets Tools, 76 dozen Handles, 28 dozen Hatchets, 10 dozen Axes, 3 gross Traps, 1 case Hardware, 24 dozen Hatchets, 24 dozen Hammers, 5 cases Hardware, 6 dozen Picks, 1336 feet Leather, 1 case Hardware, 25 pounds Nails, 12 Rifles, 12 Sets Tools, 20,000 Primers, 10,000 Cartridges, 36 cases Sceles, 8½ dozen clocks, 3 cases Hardware, 12 dozen Wrenches, 10 cases Carpenters' Tools, 96 dozen Traps.

By J. A. Gifford.—2 cases Harness, 1 case Handles.

By H. W. Peabody & Co.—59,896 pieces Slate, 450 pounds Fuse.

By McLean Bros. & Rigg.—1 gross Graters, 21 dozen Saws, 30 pairs Barn Door Rollers, 12 dozen Axes, 36 dozen Mouse Traps, 24 dozen Mouse Traps, 84 dozen Pulleys, 8 gross Coat and Hat Hooks, 36 dozen School Slates, 9 pairs Revolvers, 3 gross Chalk Lines, 3½ dozen Wrenches, 1 dozen Tills, 26 dozen Curry Combs.

By Arnold Cheney & Co.—1000 pounds Buggy, 3692 Buggy Parts.

By F. B. Wheeler & Co.—27 dozen Hardware, 17 cases Hardware, 10 gross Brushes, 25 dozen Lamps, 25 dozen Holders.

By Nevius & Haviland.—25 gross Shade Rollers, 20 gross Shade Rollers.

By Winchester Repeating Arms Company.—50,000 Shells, 71 pounds Metallic Cartridges, 50,000 Shells.

By A. Field & Co.—6 cases Rifles and Tools, 2 cases Plated Ware.

By A. S. Lascelles & Co.—1⅙ dozen Plated Ware, 24 Hatchets, 30 dozen Axes, 20 cases Axes, 1 gross Razor Strops, 20 dozen Cutlery, 6½ dozen Hardware, 280 pounds Nails, 20 Firearms, 1 dozen Guns, 9 dozen Hardware, 2 gross Shovels.

By V. Basanta.—9 gross Toy Pistols, 3 dozen Wheelbarrows, 4 dozen Corn Shellers, 60 dozen Hammers, 95 dozen Handles, 2 dozen Wagon Jacks, 21 dozen Brushes, 1200 feet Hose, 4 dozen Guns, 6 dozen Loading Tools, 100,000 Primers, 16,000 Cartridges, 6 Guns, 40 dozen Shovels, 170 dozen School Slates, 2 dozen Clocks, 10,250 pounds Carriage Bolts, 3 dozen Wrenches, 5 dozen Pumps.

By R. W. Forbes & Son.—38 Clocks, 2 dozen Saws, 51 packages Carriages and Parts, 6 packages Hardware, 1 box Cider Mills, complete, 8 packages Hardware, 454 pounds Lining Nails, 24 dozen Axle Clips, 10 pounds Carriage Varnish, 1 box Stamped Tinware, ⅙ dozen Miter Boxes, 1200 Leather Washers, ¾ dozen Sad Irons, ⅓ dozen Locks, 122 bundles Rims.

By Arkell & Douglas.—7 Buggies, 6 Lawn Mowers, 236 pounds Tacks, 134 dozen Handles, 1 dozen Wringers, 6 Stoves, 2 gross Shade Rollers, 309 pounds Slates, 50 dozen Brooms, 24 dozen Handles, 4 dozen Churns, 12 dozen Paint Brushes, 16 dozen Axes, 25 dozen Axes, 80 dozen Shovels, 12 dozen Handles, 40 dozen Shovels, 32 dozen Axes, 32 Churns, 28 dozen Axes, 3 gross Traps, 13 dozen Paint Brushes, 24 dozen Hatchets, 12 dozen Hose, 3285 pounds Bolts, 732 dozen Handles, 30 dozen Shovels, ⅓-gross Traps, 16 dozen Wire Goods, 9 dozen Saws, 20,000 Cartridges, 39 Wringers, 20 dozen Hatchets, 12 dozen Handles, 6 dozen Toys, 18 dozen Locks, 40 dozen Axes, 5 cases Carriage Hardware, 39 bundles Carriage Hardware, 100 dozen Shovels, 600 dozen Handles, 55 dozen Hatchets, 10 dozen Saws, 120 dozen Sewing Machines, 10 dozen Saws, 90 dozen Shovels, 1 Case Handles.

By V. Basanta.—15 dozen Lanterns, ⅓ gross Hat Racks, 4½ gross Whisk Brooms, 96 dozen Lock Blanks.

By Coombs, Crosby & Eddy.—10 dozen Axes, 54 Stoves, 7 dozen Braces, 168 pounds Oil Stone, 15 dozen Hammers, 4 dozen Ladders, 62 Stoves, 16 dozen Door Springs, 26 dozen Hardware, 5 dozen Wrenches, 46 dozen Hardware, 11 dozen Edge Tools, 3 Churns, 1 dozen Clocks, 5 dozen Axes.

By Ilsley, Doubleday & Co.—1¼ gross Axle Grease, 3 dozen Paint Brushes, 112 pounds Glue, 3 gross Paint Brushes, 6720 pounds of Axle Grease, 336 pounds Glue, 25 gross Axle Grease, 12 cases Carriage Ware, 2½ dozen Iron Banks, 3016 feet Leather Belting, 55 dozen Toys, 10 dozen Roller Skates, 12 gross Glass Cutters.

By R. W. Cameron & Co.—10 dozen Axes, 60 cases Handles, 7 Carriages, 9650 pounds Machinery, 100 Lamps, 30 gross Polish, 12¼ gross Axle Grease, 4808 pounds Nails, 35,000 Slate, 21,500 pounds Fruit Jars, 2000 pounds Buggies, 412 pounds Brushes, 14 packages Forges, 41 Barrows, 8150 pounds Woodworking Machinery, 4 cases Saddlery, 7 cases Hardware, 1 case Whips, 36 packages Hardware, 275 dozen Brooms, 1 box Pumps.

By Singer Mfg. Company.—173 cases Sewing Machines and Parts, 200 cases Sewing Machine Oil.

By Strong & Trowbridge.—1 case Hardware

By Welsh & Lea.—22 cases Iron Bolts.

By Ansonia Clock Company.—85 boxes Clocks, 7 boxes Clocks.

By Reed & Barton.—12 packages Plated Ware.

By Russell & Irwin Mfg. Co.—7 cases Hardware.

By J. A. Ten Eyck.—4 cases Wagon Springs.

By Parker & Whipple Co.—12 cases Clocks, 2 boxes Clocks.

By Goulds Mfg. Company.—4 packages Pumps.

By J. L. Mott Iron Works.—37 Stoves.

By Healy & Earl.—1 box Emery Rollers, 2 boxes Saws.

By Collins & Co.—223 dozen Tools, 200 dozen Tools.

By Crane & McMahon.—22 cases Handles.

By H. S. Chipman.—1 case Hardware, 2 cases Handles.

By McCoy & Sanders.—2 racks Hand Spikes.

By J. Dixon Crucible Company.—1 case Lead Pencils, 3 packages Crucibles.

By F. B. Wheeler & Co.—1684 pounds Wire Cloth.

By Waterbury Clock Company.—25 cases Clocks.

By R. W. Forbes & Son.—13 Buggies, 4 cases Reloading Tools, 1 case Handles.

By Strobel & Wilken Co.—12½ dozen Express Wagons, 42 dozen Toy Banks, 218½ dozen Iron Toys, 8 dozen Toy Pianos, 27½ dozen Pianos, 35 dozen Tinware.

A White Lead Swindler.

The Pittsburgh White Lead companies have been made the victims of a swindler, whose operations have extended over the past two years. He has succeeded in carrying on his operations in different parts of the country, and thus far has escaped detection and arrest. He goes, at times, at least, under the name of C. F. Randolph, and is described as being about 33 years of age, medium hight, sandy complexion, gentlemanly appearance and good address. He has been operating recently among the Hardware dealers in Western Pennsylvania and New York State, and it is thought probable that he designs continuing to work among the Hardware dealers, as the paint houses have been pretty generally warned against him. Girard C. Smith, secretary of the Beyman-Bauman Lead Company, Pittsburgh, thus describes his method of operating:

The man who has been swindling us did not go to the houses that are doing business directly with ours. He is too sharp for that. If he did he would be detected at once. He visited houses that handle our goods, but which do not deal with us direct. His plan is to present his card from whatever house he chooses to select, make some slight concessions in price of his goods, with privilege of long time for payment, and thus secure an order. He then explains that he is in need of money, and produces a forged letter on printed note-head in imitation of the firm, instructing him to make draft if in need of money, and thus induce the dealer to cash the paper or identify him at the bank, in this way obtaining from $25 to $75 at a time, the dealer only learning that he was the victim of misplaced confidence upon the return of the draft protested several days afterward. Dealers then deem it too late to make any effort to pursue the rascal, and usually pocket the loss philosophically, at the same time mentally registering a vow to cash no more drafts or advance no money to traveling salesmen. When indorsement of draft is refused he contents himself with obtaining a loan of $5 or $10, to be returned in a few days on receipt of remittance from his house. It is probable that his operations are not limited to the White Lead interest, and that he is working other lines of business in the same way. It is estimated that he secures several thousand dollars yearly in this peculiar occupation. The cards presented by him are usually printed in gilt letters on black enameled background, and inscribed: "Manufacturers and corroders of strictly pure white lead and linseed oil." The letter-heads being ordinary printed ones, this fact alone would excite the suspicion of the dealer, being of inferior character to that employed by any of the firms represented, who use lithograph or engraved work.

He devoted his attention for a long time to small paint dealers and painters, but perhaps owing to his being extensively advertised in the paint journals he seems to have neglected that branch latterly, and is now catering to the Hardware trade, all the dealers who report recent visits from him being engaged in that branch of business. If the trade would keep a vigilant watch for this imposter and adopt the simple precaution to quietly wire the firm when applied to in this way by traveling men whom they do not know personally, the fellow's career would soon be brought to a short turn.

Clerks.

BY KNARF.

As with other things, there are clerks and clerks. There is the clerk with bangs and middle-parted hair, with an odor of Hoyt's German Cologne hovering about him; wears tooth-pick shoes, and busies himself by wiping and rewiping the pocket cutlery samples, especially when the proprietor is about. He has numerous young lady friends, the smaller the town the more numerous they are, and the more frequent their calls on him. He is the leader of fashion among the boys; the originator and organizer of picnics, dances and sleigh rides, while he has not sense

enough to know that locks were once made right hand or left hand, not reversible; or that there was a time when points did not grow on wood screws. He may go far enough to reason that, in his mind, there would be as much propriety in naming a D. H. shovel a "D. H. dirt shovel," because it goes in dirt, as to call an iron or steel screw a "wood screw" because it goes in wood.

Then there is the clerk who finds visiting the neighboring grocery or drug store more necessary to his comfort than seeing that the nail bins are kept full. His name is apt to be "Will" and the query any hour in the day is "Where is Bill." He wears a light colored flannel shirt, prominent necktie, and dotes on being a strawberry blonde. The grocery candy case and drug store soda fountain receive complimentary calls from him daily.

The clerk that was born tired is a very common occurrence. He, as a class, is of no particular physique, so that (being forewarned would be forearmed), we cannot guard against him. He is generally of gentlemanly appearance, good address, and the first impressions received of him are favorable. He is apt to be somewhat particular in knowing just what work will be expected of him, also as to length of hours and engagement. But you reason with yourself that this should be nothing against him, as you would want to know the same things if you were hiring out. So the engagement is made, and the things expected of him remain so—undone to the end of the time you have promised to harbor him. He is full of excuses for his remissness, and in weariness of spirit you wish there were no such things as excuses. You are irritated at finding him occupying your desk and favorite gold pen upon your unexpected return to the store. You wonder how much soldiering he is capable of? He believes, and will reason with you, that there is no such thing as laziness, but that some organisms are born with an inherited lassitude, which is constitutional, and cannot be eradicated. Notwithstanding this chronic disability, he is captain of the "clerk nine" when they have a scrub game of baseball, on the hottest day in summer, with the Green Stockings.

The rarest type of clerk is the most desirable, as is the case with other desirable things in this life. He is steady going, but accomplishes much. Quick to see and willing to do what he sees needs doing; a pleasant word for each customer, and a faculty of holding a second customer until he has waited on the first, almost anticipating their wants, and generally selling them something more than they intended buying. You can leave him in charge of your business and feel assured it is not only well attended to, but honestly conducted; that none of the cash finds its way into other channels than the till. But this kind of a clerk you must needs advance his wages, or some one else will, until you find it to your advantage to give him an interest in your profits and losses, or he may anticipate your kindness and take a double interest, first by engaging the hand of your only daughter and then accepting a partnership in your business.

The clerk of 30 years ago, especially in the country towns, was typical; the species now is almost extinct. A strong, rugged farmer's boy, 15 or 16 years' of age, whose system is full of buckwheat and pork, carrying evidences of the same on his face, hanging his hat on the floor behind the door upon his first appearance at the family table. He is to board and room at his employer's home. The knife is the most convenient mode of transit for food, f.o.b., his mouth being the point of delivery. The partly masticated dinner goes down with a gulp. In a short time these evidences of being a rustic disappear, and his natural adaptability to environments soon lead him to a more easy carriage and the polite courtesies that make up so large a part of home and business life. Being a member of the family, he was under the eye and care of his employer, which proved to be of untold advantage to him in after life. His associates were scrutinized, and he was expected to be at home after the store closed. His religious training was not neglected, and while his wages were small, perhaps $25 to $50 for the first year, for this first year he saved money. As a result after a service of five or six years the raw country boy leaves his employer with a well-formed character, thoroughly acquainted with the business, competent to take a prominent place in the world. This plan of educating a boy in business was subsequent to the prehistoric time of binding them out.

The modern clerk presents a different appearance. Too often, besides getting a knowledge of business in the day time, nights are employed in playing poker, drinking and frequenting places where he would be ashamed to have his best girl know he went. It is too common a course nowadays to need any portrayal here, but we know the end from the start. The roads to success and ruin are in diametrically opposite directions.

The Question of Credit.

A recent issue of the *American Storekeeper* contains some very valuable suggestions on the subject indicated by the above title, and as they appear applicable to all lines of trade we present them herewith for the benefit of our readers:

A universal reply to the question, "How is business?" has come to be, "Business is good, but collections are slow." This reply may be varied as concerns business, but collections seem to be chronically slow. Collections follow as one of the many troublesome sequences of granting credit, and granting credit seems to be with most merchants a necessary concomitant to business. The evils of credit are frequently set forth in our trade exchanges, and articles are often published describing successful methods of collecting bills. These vary from the shotgun policy to the soft-soap policy, but one thing stands out very plainly on them all: They are undignified, unbusiness-like, and, we believe, unnecessary. Merchants who are burdened with slow-paying customers universally regret that they have a credit system, and as universally declare it to be a necessary evil connected with merchandising. We are prepared to admit that credit is, in many cases, a necessary adjunct to a mercantile business, but we cannot admit that it need always be an evil. It simply lies within the merchant's power to make his credit customers a disappointing and profitless feature of his business, or a prompt, reliable class whose payments may be reasonably relied on. To a certain degree the necessity of expending commissions to collection agencies, whose effectiveness in many cases is due to their blackmailing schemes, must be very humiliating to a merchant. It is an evidence that he has placed confidence in unworthy persons, and that his judgment is not to be relied upon. It is an evidence that he did not give that attention to the details of his business which would enable him to conduct it without giving his goods away. It is an evidence that the consumer was a little too sharp for the dealer.

We are well aware that some of our readers who have made bad debts will not thank us for taking this view of the case, but, if they will be patient, we will endeavor to show them that our position is correct. To do this we must consider for a moment what credit is. There should be no difficulty in understanding the nature of credit. It is a loan of saleable commodities without security. The merchant who trusts a man for a barrel of flour furnishes the man material on which to live while he earns money to pay for it, the flour being consumed when the payment is made. Credit thus permits us to wear out clothing before it is paid for, to consume groceries without having given anything for them, and—in other words—to eat our chickens before they are hatched. The merchants who grant credit place themselves in the position of philanthropic persons who enable their customers to live before they have earned the right to live. There are cases of deserving poor who are temporarily unable to pay for the means of sustaining life, but merchants who feel charitable should support such persons purely as a charity and not as a business policy.

Consider for a moment the position which you, as a storekeeper, occupy. You have invested your money in a stock of goods. If the goods have been paid for, they belong to you absolutely. They are to you the results of saving, thrift and economy. Those goods you can give away if you like, but you possess them because you believe that you can profitably exchange them for commodities you need. In this exchanging process money need not necessarily enter, as your goods could be directly bartered for other goods—as they frequently are for butter, eggs and produce—without any money passing between you and your customers. Money only enters as a convenient and reasonable equivalent for commodities, and your goods should purchase as much money as you originally exchanged for them, plus a sum which will recompense you for placing your services at the command of the public. By taking this view of the transaction, you will see that you might as well loan a man $10 without security, note, or other evidence of debt, as to trust him for goods which you could exchange for $10.

At the risk of being wearisome, let us impress this fact thoroughly on your mind. Colwell, a writer of great insight, thus contrasted the credit and cash systems: "Under the credit system no equivalent is given at the time of sale, the payment being postponed for a time definite or indefinite." "This is in direct contrast with the cash or money system, in which every article is either paid for in the precious metals (or their paper equivalents) at the time of delivery, or at some time afterward," the last phrase referring to purchasing of wholesalers, payment being made on receipt of bill. Credit is the general belief entertained of men that their action will correspond to their promises, and is based on the belief in the existence of money actually or prospectively in the possession of the person to whom credit is given.

Let us suppose now that the stock of goods in your store is not entirely paid for. You took what money you had saved and went to the wholesale dealer for your stock of goods, which you desired should equal twice, perhaps, the money you had saved. Did you simply select your goods, pay what money you had and order the balance charged to your account? Ah, no! we have no doubt you remember your interview with the credit man! Did you not have to unbosom yourself quite freely, and did not the firm find out your standing from the various commercial agencies before any goods were delivered? Certainly. You remember it well. Did you take it as an affront and an imputation on your honesty? Not at all. We dare say you furnished all the information asked for willingly, as you should have done, and that you have been careful to maintain your credit ever since.

Let us now come from generalities to particulars. On general principles we prefer a cash business. It is more speedy,

more profitable and less annoying, but we realize that a credit business is much preferred in some localities. Granting this much, we propose to take the ground that a merchant can do a credit business without loss, and without trouble and anxiety. In order to accomplish this, however, he must conduct his credit business as a bank loans money—with caution. As a rule, accounts are forced on a storekeeper. Few customers ever directly ask to open accounts. They send children after things with a lisped request to charge the goods. They ask you to make a slip until they come in again, or they buy more than they can pay for and ask you to "remember the balance" There are hundreds of ways to do it, but the merchant should present a bold front at the first attack. He should not refuse any person credit unless he is prepared to do a cash business, but upon the first application for credit he should have his would-be debtor understand distinctly what credit at his store involves.

Credit should largely rest on a knowledge of a man's financial history and condition. It should not be refused to a man who all his life has met every engagement, nor should it be extended to one who has regularly failed therein. Your own judgment of the man's character should not be relied upon to guide you in this matter, because there is a natural inclination in the human mind to magnify that which is not certain, and we are apt, therefore, to ascribe more means to a man than he really possesses. A merchant should be guided in granting credit to a person by: 1. The positive amount of capital possessed or the ability to earn wages. 2. The general fidelity displayed in past engagements. 3. The co-operation which the law will give in the collection of the account, if necessary to proceed to law. It is well to know the extent of protection the law throws around a debtor, because, as Charles Francis Adams has pointed out, "The first reliance of a creditor is commonly upon the good will of his debtor; the second upon the law of the land."

Recognizing that the person to whom credit is given is the one accommodated, and not the merchant, it is well to throw off this absurd fear of losing trade and of being obliging, &c., and maintain a stiff control of your credit. If a person tries to enforce credit on you, stop right there and have a plain talk with him, or, if easier, have your talk printed. It might be well to ask him if he wished to open an account, and to tell him, if he does, to make application in regular form, as do all your credit customers. On this form there should be a statement something like this:

"We endeavor to sell only the best goods and at the best prices. These prices are based upon a cash business. To conduct a credit business costs more and reduces reasonable profits, or increases the prices to cash-paying customers. Those who receive credit should be willing to pay interest on the amount of their purchases, and should willingly furnish information on which I can base an opinion as to their financial responsibility. I do not desire poor paying customers. If you are prepared to submit the following application for credit I shall be pleased to consider it. JOHN JONES."

"APPLICATION FOR CREDIT.

"I desire to apply for credit for groceries to a sum not to exceed *ten dollars* a month. I agree to pay promptly on the *first* of each month and will pay six per cent. interest on the amount of my purchases. I am employed by *John Smith* and have been with him for *two* years. Previous to that I worked for *John Brown*. I rent my house of *John Green*, to whom I refer you. I buy my dry goods of *John Black* and my meat of *John White*. In case I do not pay my bills promptly on the first of each month you are authorized to use this as an order on *John Smith* for my wages.

"Very respectfully,
"JOHN REDDING."

In this blank form the words in italics are those which the applicant is to write. The form can be varied indefinitely or not used at all, but the principle remains the same: Investigation before trusting people with your goods. You not only submit to it in buying, but expect it, and the same principle should govern you in selling. Credit is impossible without confidence, and confidence is disastrous without knowledge. We undertake to say that there would be fewer victimized merchants if some such credit investigation was universal. There is no reason why it should not become universal, because it is just, and honest men admire justice. Always remember and teach your customers to remember that "money talks," and that "credit is an excellent walking stick, but a treacherous crutch."

Legal Decisions

ASSIGNMENT FOR BENEFIT OF CREDITORS.

C. & H. made a general assignment, and their balance in bank was $3069.61. The bank had discounted notes for them for $11,500, of which $7000 fell due, and protests were made before the assignee demanded the amount on deposit. This demand was refused on the ground that the bank had the right to set off the indebtedness of C. & H. to it against their balance on deposit. The assignee then brought suit—Chipman *vs.* Ninth National Bank—but was defeated, the court ruling that the bank's contention was correct. The case was carried to the Supreme Court of Pennsylvania, where the judgment was reversed. Judge Sterrett, in the opinion, said: "It is clear that at the date of the assignment the bank had no lien or set-off against the amount then on deposit to the credit of C. & H., and that the assignee, by virtue of the assignment, and as trustee for the creditors, was then entitled to assert his and their right to any property of the assignors which passed by the assignment, against any person claiming by subsequent transfer, attachment, judgment, execution or any other lien. The reason of this is that the rights of the assignor's debtors and of his creditors are fixed by the assignment. The creditors cannot attach or levy on the assigned assets, and the debtors cannot buy up claims against them and set them off against claims against the assigned estate. The bank, in this case, had no right of action at the date of the assignment, and as a creditor of the assignors, holding notes that matured after all of their property, including the money deposit, had passed to the assignee in trust for all of the creditors, the bank is in no better condition than they are. The deposit must be paid over to the assignee, and the bank must take its place among the other creditors."

SALE OF PROMISSORY NOTES.

W. & Son became insolvent, and S., who held $7500 of their unpaid notes, agreed to sell them to G. for $3000. He, however, refused to deliver the notes, though he knew they were bought for a certain purpose, and G. brought suit to compel him to do this instead of suing for damages, and he got a judgment requiring the transfer of the note on the payment of $3000. The case—Gottschalk *vs.* Stür—was carried to the Court of Appeals of Maryland, where the judgment was affirmed. Judge Robinson, in the opinion, said: "Though the courts will not in all cases decree the specific performance of a contract for the sale of goods and chattels, because there is an adequate remedy at law in damages, yet it is well settled that when there is an agreement to buy a specific chattel for a specific purpose, and this purpose can only be answered by the delivery of the chattel itself, or where from the nature of the subject matter of the agreement the measure of damages must necessarily be uncertain, or where damages will not be as beneficial to the purchaser as the performance of the contract, equity will interfere and decree the specific performance of the contract; because in such cases an action at law for a breach of the contract will not afford the purchaser a complete and adequate remedy. Now, in this case these notes were bought to be used for a specific purpose; a judgment for damages for their value cannot be recovered, for their value cannot be shown, as the makers are insolvent, and it is very evident that to do justice here we must affirm the judgment below which compels the transfer of these notes upon the payment of the price fixed, $3000.

CORPORATION SUIT BY ONE STOCKHOLDER TO COMPEL AN ACCOUNTING.

D. was a stockholder in the Travelers' Newspaper Association, and he sued for an account in behalf of himself and such other stockholders as should elect to come in the corporation, and Roland Worthington and Roland Worthington, Jr., as directors of the company. It was alleged that Roland Worthington is the president and treasurer of the association, and has long controlled the majority of its stock, by means of which control he has chosen such persons for directors as he has seen fit; has improperly invested money; has kept uninvested large sums of money; has given himself an excessive salary, and has charged an improper and unjust rent for the premises occupied by the corporation, and owned by him. The relief asked was an accounting, a return of moneys improperly taken, a just distribution of the profits of the concern, and that all the funds in excess of $5000 be paid out to the stockholders. There was no allegation that D. had applied to the officers of the corporation for an account, or that he had brought his grievances before the association itself to get relief. The defendants demurred, and the case—Dunphy *vs.* Travelers' Newspaper Association—was taken to the Supreme Judicial Court of Massachusetts for argument. Judge Knowlton, in sustaining the demurrer, said: "Stockholders must seek relief first through corporate channels, surely one stockholder cannot of his own will force the corporation into a course of litigation. Still, if the corporation itself refuses to redress fraudulent acts, a stockholder can have relief in a court of equity. In this bill in equity there are sufficient allegations of Roland Worthington's contract of the board, but it does not show that any effort was made to get relief from the corporation itself, and there is no allegation of any fraudulent combination between Roland Worthington and the other directors to injure the coporation and the plaintiff. The bill is therefore insufficient, and the demurrer must be sustained."

The East Birmingham Iron Roofing and Corrugating Company, of Birmingham, Ala., have been reorganized by the election of the following officers: President, General Rucker, of Alabama; vice-president and treasurer, Joseph F. Johnston, president of the Alabama National Bank. The above, with H. P. Lloyd and L. L. Sagendorph, constitute the Board of Directors. S. H. Wilkes, the acting manager of the company, reports a prosperous business and the outlook promising.

Mayor Hewitt has already forwarded for the relief of Jacksonville over $36,000.

Foreign Markets.

EQUIVALENTS

	Cents.
Franc, Peseta or Lira	19.3
Florin (Netherlands)	40.2
Florin (Austria)	35.9
Milreis (Portugal)	$1.08.
Milreis (Brazil)	54.6
Mark (Germany)	23.8
	Pounds.
Kilogram	220.5
Picul	134.

WEST INDIES.

PORT OF SPAIN, TRINIDAD, August 17, 1888.—*Asphaltum.*—Our market has been moderately active and well sustained at $14.04 ℔ ton, inclusive of export duty, boiled and crude, at $6.84. Exportation since January 1 amounts to 35,131 tons, against 20,578 last year and 21,889 in 1886. *Exchange*, 90 days' sight, $4.84.—*E. P. Masson*

CHINA.

CANTON, July 28, 1888.—*Silver Coin.*—The Chinese Government has made a contract with Mr. Heaton, of Birmingham, England, for a complete set of mint machinery for the coinage of Silver dollars and fractional coin with a capacity of turning out $128,250 ℔ day, or 2,700,000 coins, including Copper coin. The latter will have the traditional square perforation in the center. *Iron and Coal Mines.*—A railroad is to be built to connect Packhoi with the rich mines at Lientchu, in the Longchan district.—*Weekly Mail.*

EAST INDIES.

SINGAPORE, July 25, 1888.—*Tin.*—Our last report was dated 11th inst., since when the advance in London has given buyers more confidence, and sellers have begun to realize their holdings. About 200 tons have changed hands at up to $34.50 ℔ picul, with buyers at this price still offering. *Gum Copal.*—There are large stocks which are offering at some decline, but the demand is lifeless. *Gum Damar.*—The arrivals have been of inferior quality; we quote $17.50 ℔ picul for Lingah. *Tonnage.*—London rates are steady at 25/ @ 30/ for weight. For New York via Canal there is no tonnage offering; via Cape the Tabique and Sonntag have been circulated at 25/ for weight. For Boston the Hooghly loads on charterer's account. *Exchange* is quoted 3/1, for six months' sight credits. Tin shipments from the Straits Settlements to the United States during the first six months have been as follows: 1888, 13,377 piculs; 1887, 43,075; 1886, 31,533; 1885, 16,051; 1884, 26,651, and 1883, 52,489.—*Gilfillan, Wood & Co.*

PENANG, August 4, 1888.—*Tin.*—Since our last report of the 20th ult. receipts amounted to 11,000 piculs, of which Europeans took 7200 and Chinamen 3000. Prices meanwhile advanced from $33.65 to $34.50, but the exchange on London brought the quotation down to $34.10 at the close. *Exchange*, four months' bank, 3/3¾.—*Schmidt, Kustermann & Co.*

MANILA, September 10, 1888.—*Hemp.*—During the week there have been buyers at $10.25 ℔ picul, against $9 same time last year, equaling ℔ ton, cost and freight, £35, against £33. The clearances for the United States since last cable have been 16,000 bales, against none in 1887, and since January 1 125,000, against 150,000; there are still loading for the same destination 42,000, against 29,000. Cleared for England since January 1, 242,000 bales, against 148,000, and loading 1000, against 8000; cleared for all other countries, 51,000, against 29,000; receipts at all ports since last cable, 28,000, against 10,000, and since January 1, 427,000 bales, against 344,000 last year and 276,000 in 1886. *Freight*, $6, against $6. *Exchange*, 3/5, against 3/9.—*Ker & Co. to Charles Nordhaus, New York, per cable direct*

COLOMBO, CEYLON, August 2, 1888.—*Plumbago.*—Since our last report the market has exhibited great firmness; we quote in rupees, ℔ ton: Large lumps, 145 @ 170; Ordinary lumps, 125 @ 160; Chips, 80 @ 95, and Dust, 40 @ 65. Following are the shipments made since October 1: To England 67,547 cwt.; to Marseilles, 38; to Trieste, 523; to Hamburg, 10,942; to Antwerp, 3964; to Bremen, 2012; to India, 82; and to the United States 130,332—together, 215,440, against 214,858 cwt. last year, 173,844 in 1886, and 171,929 in 1885. *Coir Yarn*, Nos. 1 to 4, may be quoted 7 @ 12 rupees ℔ cwt. *Exchange*, 6 months' sight credits, 1/4 15-32.—*Volkart Bros. through their Agent, John W. Greene, 82 Wall street, New York.*

SPAIN.

BILBAO, September 1, 1888.—*Iron Ore.*—There has been great animation during the week, the tendency at the same time being upward. We quote Campanil 7/6 @ 8/1, and Rubios, 6/10 @ 7/3; in a few instances, on smaller lots, an advance has been submitted to. The week's shipments sum up 66,877 tons, which is nothing very great, compared with former years at this season, but it appears that many steamers in the habit of calling here for cargo went elsewhere to earn bigger freights. Total shipments hence since January 1 aggregate 2,560,999 tons, against 3,070,284 last year *Pig Iron* is firm; coastwise 874 tons were shipped and abroad 1496.

Export from Spain During the first Six Months.

	1886. Tons.	1887. Tons.	1888. Tons.
Calamine	18,217	17,634	16,601
Pyrites	358,386	403,061	418,720
Iron Ore	2,183,831	2,713,736	2,375,875
Pig Iron	27,655	59,288	34,863
Precipitate	13,396	13,745	13,541
Quicksilver	512	1,093	857
Pig Lead	54,780	66,349	65,040
Totals	2,656,777	3,274,906	2,925,497

With the exception of Pyrites every item shows a retrograde movement. Spot *Pig Iron* quotations are 57 @ 60 pesetas or francs ℔ ton, f.o.b., futures, 55 @ 58; Lingotillo at Huelva or Seville, 65.—*Bilbao Maritimo y Comercial.*

GERMANY.

HAMBURG, September 8, 1888.—*Iron.*—The Rhenish-Westphalian Pig Iron market has been steady. Spiegel has been quiet on the whole at 54 marks for 10 % @ 12 %, the home market being dull and nothing doing for American account. English consumers have had a good chance to resume purchases and their operations continue. Stocks are the same as last year. The new orders are all the way to the close of 1888. Forge Pig has ceased to be offered so very low from Siegen, where the price is now 46 @ 47. Foundry Pig is sustained; Thomas is selling best; Luxembourg is quoted 40.50; English Bessemer, 44/6. Merchant Iron is doing better, both at home and for export; prices are moderately remunerative. Boiler Plates are as active as ever and Thin Sheets are also looking up. Both foundries and machine shops are in a flourishing condition and the tendency in Castings is upward. Car works do a large trade, and, two months hence, there will be added the Government adjudications. The quotations at the works are: For Merchant Iron, 125 @ 127.50 marks ℔ ton; Hoops, 132.50 @ 135; Bessemer Billets, 135, and Steel Rails, for mines, 115. The Schwartzkopff Machinery Company have declared a dividend for the fiscal year just ended of 22 %, against 35 % the previous year, sales of machinery not having exceeded 5,000,000 marks, against 8,820,000 then. The Rhenish Steel Works have declared an 11 % dividend, against 9 %; the difference arises from the low price obtained for Steel Rails. Wire Rods, after deducting the export bonification, are selling at 115 marks. *Metals.*—Lead has been firm, both Copper and Spelter are improving.—*Borsenhalle.*

RUSSIA.

ST. PETERSBURG, September 3, 1888.—*Petroleum.*—The movement to substitute Naphtha for Coal is making steady headway in a good many localities in Russia. Thus, at Moscow, Naphtha supersedes Coal rapidly as a fuel for manufacturing purposes. The saving in freight is so great that the cost of Naphtha as a fuel is only 7 rubles, where that of Coal is 10. The influence of this change is already felt in the Donetz Coal Basin and the industries there existing. Miners are scarce and the supply of Coal is insufficient; hence in every direction Naphtha is resorted to. At Odessa the scarcity of Coal is causing great inconvenience and there is a general outcry against the duty on English Coal.—*Journal de St. Petersbourg.*

An Improved Air Pump.

The ordinary type of air pump with clack valves is open to two objections. Whether it be a vacuum or compression pump, the piston only begins to draw in a fresh charge of air when it has advanced a certain distance, and thus reduced the pressure behind it to something less than exists in the inlet pipe. The quantity of air drawn in during a complete stroke of the piston is therefore always less, and may be considerably less than the volume swept by the piston. This reduction in the volumetric efficiency of the pump depends on the amount of clearance space, and on the ratio between the pressure in the inlet and that in the discharge pipe. With a clearance of 5 per cent., a vacuum pump of the ordinary type would only have 50 per cent. volumetric efficiency when producing a vacuum of one-tenth of an atmosphere; and if required to exhaust down to one-twentieth of an atmosphere the volumetric efficiency would be reduced to zero—that is to say, the valves would not open at all, and no air would be discharged. If the pump be required for compression a limit of pressure would similarly be reached when no more air could be discharged. To make up for the loss in volumetric efficiency, even when working below this limit, it is necessary to employ a larger pump than would suffice if the clearance space could be reduced to zero. This is, of course, a practical impossibility; but this space is sometimes reduced to a certain extent by the introduction of water in the so-called wet-air pumps. These pumps must, however, be worked at a low piston speed to avoid shocks. These defects of the ordinary air-pump have been remedied in the type introduced by Messrs. Burckhardt & Weiss, of Basle, Germany. A description and illustrations are published in a recent issue of *Industries.* The clack valves, which cannot be used in a pump running at high speed, have been replaced by an ordinary slide-valve; and the prejudicial effect of the clearance space has been minimized by an ingenious contrivance, which, at the end of every stroke, permits the air in front of the piston to pass round it to the other side. A device of this kind had already been introduced for air-pumps nearly ten years ago. It consisted of short channels or grooves placed at either end of the cylinder in such a position that the piston, when at the limit of its stroke, establishes communication between the two sides of the cylinder.

This somewhat primitive method has been improved upon in the pump we are about to describe. A channel is placed within the slide-valve, by means of which the two ports are momentarily brought into communication at each end of the stroke. The compressed air in front of the piston is thereby permitted to pass round through these channels to the back of the piston, so that when the return stroke commences, the pressure behind the piston is very nearly that existing in the inlet-pipe, whilst the quantity of air which has passed to the other side of the piston is expelled, together with air drawn in at the previous stroke. We may here remark that a similar arrangement—viz., a small channel within the slide-valve, is sometimes used in steam engines to admit a cushion of steam to the front of the piston just before it reaches the end of its stroke. The slide-valve of the pump in question carries on its back a clack-valve, held on by a spring. The object of this arrangement is to prevent the air in the outlet-pipe from rushing back at the beginning of each stroke, when the air within the cylinder has not yet been compressed to the same degree as at the end of the stroke. If air were allowed to flow back, this would not lower the volumetric efficiency of the pump; but as the pressure against the face of the piston throughout the whole of the stroke would be equal to or slightly larger than the pressure in the delivery pipe, it would entail a waste of power, and reduce the dynamic efficiency. By putting a clack-valve on the top of the slide-valve, the full pressure of the discharge is kept away from the piston until some later point in the stroke, when the air within the cylinder has been compressed sufficiently to open the clack-valve, and flow out into the valve-chest and delivery pipe. The machine is a combined steam engine and air pump, both the steam and air cylinder being bolted to the same cast-iron bed plate.

The steamship City of New York is said to have burned 290 tons of coal a day, when running at three-quarters speed.

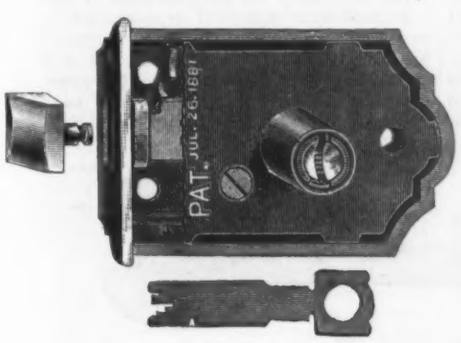
Humphrey's Wood-Workers' Knife.

By means of the engraving herewith we lay before our readers a very convenient tool, which is being offered the trade by the Humphrey Tool Company, of Warren, Mass. The manufacturers state that while this knife, by reason of its shape and construction, is peculiarly adapted for use by woodworkers, it will be found very convenient and useful in many other lines of trade. The handle of the knife is made of hardwood and tipped with brass, which renders it very strong and durable. It is smoothly finished and of such shape and size as to easily fit the hand of the operator The blade, which is 6 inches long, is made of the best quality cast steel, carefully tempered and tested. It is V-shaped in cross section and fits an opening of corresponding shape in the end of the handle. A set-screw, not shown in the engraving, is placed in one end of the handle, and when the blade is in position forces it firmly into the bottom of the opening in the handle; by this means any length of blade desired may be secured. The construction is such that when the knife is not in use the blade may be reversed in the handle, which protects the edge and tends to keep it sharp. Two widths of blade are made—viz., $\frac{7}{16}$ and $\frac{9}{16}$ inch. In the engraving presented herewith the blade and handle are shown apart.

Humphrey's Wood-Workers' Knife. Handle and Blade apart.

Barnes' Reversible Night Latch.

This article, which is made by the Barnes Mfg. Company, New Haven, Conn., for whom Sise, Gibson & Co., 100 Chambers street, New York, are sole agents, is represented in the illustration herewith given, in which part of the cap is broken away in order to show the construction, which is the special feature of the latch. As indicated in the cut, the latch can be made either plain or reverse bevel as desired. To accomplish this the cap is to be removed and the small lever which rests on the head of the bolt raised, when the bolt head can be drawn out, permitting it to be turned over and replaced, when the lever being shut down tightly and the cap replaced, the operation is completed. The cut shows the lever up and the bolt head out and ready for reversing.

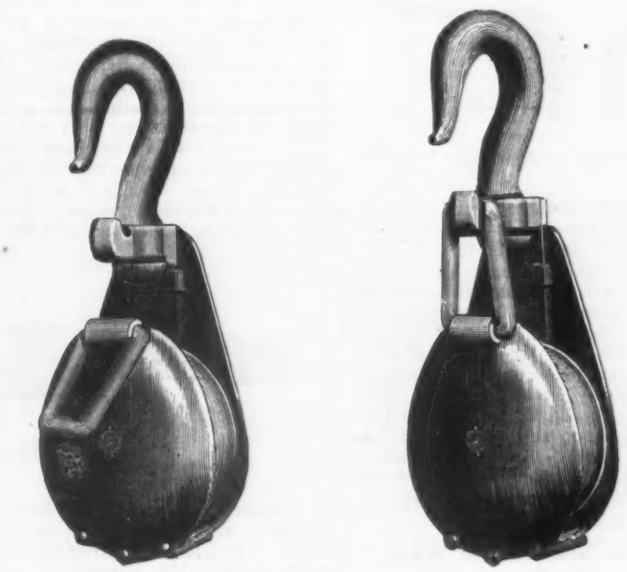


Barnes' Reversible Night Latch.

The manufacturers emphasize the simplicity of this arrangement, the absolute firmness with which the bolt head is held in place, and the convenience that results from having a latch thus reversible. The latch is made with heavy japanned iron case, 4 x $2\frac{3}{4}$ inches, heavy brass bolt, nickel-plated draw-back and turn stop knobs, bronze stop escutcheon, five tumblers and two flat keys. They are packed separately in boxes with both box nosing and flat brass striker.

New Snatch-Block.

The Cleveland Block Company, Cleveland, Ohio, have patented and are introducing to the trade a new style of snatch-block which is illustrated in the accompanying cuts. This block has, it will be observed, a sliding strap to which is attached the hook and through a slot in which the steel pin passes. With this construction the block, it is claimed, when closed and ready for use, is as strong as a tackle block with both sides complete, and it is alluded to as combining safety, strength, ease of manipulation and general efficiency.

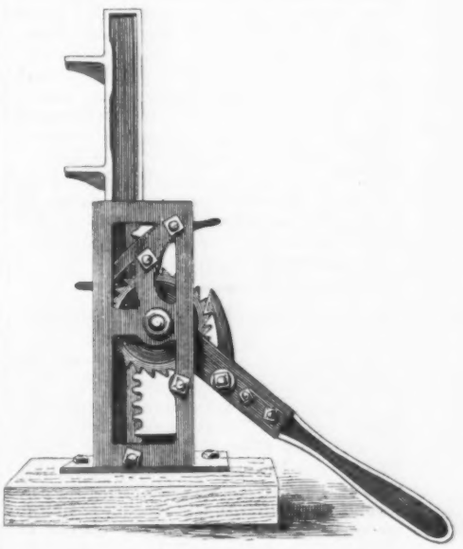


New Snatch-Block.

The latest idea in boiler construction, says the *Locomotive*, is to leave several bad leaks in the boiler to allow for expansion. Expansion of what is not stated, but some one who is described as a competent engineer says it is so, and that boiler-makers prefer to have new work show leaks for the above reason. Now, this may be so, but if it is, why is it that seams are calked destructively, painted sometimes, puttied, and even have driven into them wooden shims to prevent leaks when getting ready for the hydrostatic test? And why is it that in those shops where they have the reputation of doing the best work, no leaks occur, no paint is allowed on the boiler until after it has been tested, and in many cases 150 pounds pressure does not cause one drop of water to come through seams.

The Samson Jack.

This article, an illustration of which is herewith given, is manufactured by Biglin & McMullan, 589 Hudson street, New York, for whom J. C. McCarty & Co., 97 Chambers street, New York, are agents.



The Samson Jack.

The jacks are made under patent of John Parr, of which the manufacturers are sole owners. They are described as made of the best refined malleable iron, thus securing great strength, and the point is made that they will last for years without repair, and are warranted not to break. As will be seen from the illustration, the jack is operated by a handle or lever bearing a pawl, which catches into a ratchet-wheel, and on the shaft of this ratchet-wheel is a pinion, which engages with the rack. On the lever there is a spring bearing on the pawl, by which its efficiency in working is secured. There is also another pawl, shown in the cut, which prevents the turn-

ing of the ratchet in the reverse direction while lifting the lever for a new stroke. With this construction and the strength of the parts it will be seen that the jack is capable of lifting a heavy load with ease and efficiency. The load can also be lowered without difficulty. These jacks are made in three sizes, No. 0, the metal portion of which weighs 8 pounds, adapted to the use of light vehicles, such as carriages and business wagons, with a lifting capacity of 1500 pounds; No. 1, the metal parts of which weigh 14 pounds, adapted to the intermediate weights of wagons and trucks, and has a lifting capacity of 3000 pounds, and No. 2, which is shown in the illustration, the metal parts of which weigh 24 pounds, adapted for all kinds of heavy work, such as heavy trucks, vans, express wagons, &c. This size is in use in the New York Fire Department, and is also used by a number of well-known houses whose business requires the use of heavy wagons and trucks. The manufacturers emphasize the merits of these jacks as being increased power, quickness of motion and saving of time and labor, and offer them to the trade, confident that they will be found to supply a want.

Eureka Pipe Bending Appliance.

A device of especial interest to the plumbing trade is being manufactured by H. A. Haskell, 38 Chardon street, Boston, Mass., his New York agents being the Colwell Lead Company, 63 Centre street. The Eureka Pipe Bending Appliance consists of a tightly coiled steel wire spring, wound to a size that will just fill the pipe. Its application is exceedingly simple, as all that is necessary to do is to insert it in a pipe and then bend the pipe into any desired shape. The appliance, in other words, serves the purpose of a core, and beside being much more convenient than filling the pipe with sand or rosin, it is

Samples of Bent Pipe.

said, furthermore, that the results are much better. When the pipe is bent to the desired shape the bender is turned a few times to the right which, tightening the coil, permits it to be withdrawn from the pipe. It is spoken of as especially useful in bending lead pipe above 1 inch in size for goose-neck or other irregular forms without flattening or collapsing. The illustrations herewith given show pipes bent by the aid of the Eureka Pipe Bending Appliance, and are presented as illustrations of the even work which it accomplishes. The device is at present made in eight sizes from 1 to 3½ inches.

Combined Measure and Steam Cooker.

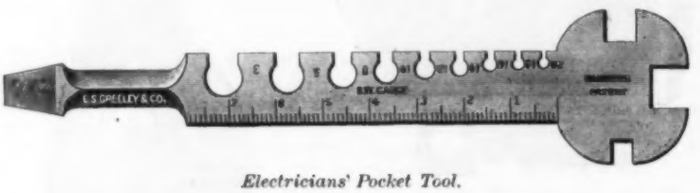
In the accompanying illustration we present a general view of an improved steam tea-kettle cooker and measure combined, which is being placed upon the market by Mr. H. M. Hillson, Lewis and Fulton streets, Boston, Mass. The device is made of the best charcoal tin plate, with the body stamped in one piece. It is provided with a strong handle and a cover which closely fits the top. The utensil is made tapering from the top toward the bottom, and it is claimed will fit any tea-kettle. The body of the vessel is stamped in such a way as to indicate

Hillson's Steam Cooker and Measure Combined.

various capacities, ranging from 1 pint up to 2 quarts, the figures being clearly shown in the engraving. The device is neatly finished, and it is stated that when once introduced no housekeeper would be without one. As a pudding boiler it is claimed to be without a rival. Patents are pending, covering the principal features of construction. The vessels are packed in bundles of one dozen each.

Electricians' Pocket Tool.

The E. S. Greeley & Co., 5 Dey street, New York, are putting on the market a pocket tool for electricians which possesses a number of useful features. The shape and general appearance of the article is shown in the illustration, the cut being a slight reduction from the actual size. It is described as made of the best tool steel, and is nickel-plated and of fine workmanship. Beginning at the right of the cut it will be noticed that there are three wrenches, $\frac{3}{16}$, $\frac{1}{4}$ and $\frac{5}{16}$ inch size respectively. The top of the tool is formed into a wire gauge, the particular illustration showing the Birmingham wire gauge, though it is also made for the other standard gauges The other edge, as shown, is a millimeter scale, while



Electricians' Pocket Tool.

the reverse side is scored in inches, admitting a ready comparison of the two scales. The left-hand end of the tool is a screw driver, while between it and the gauge part the metal is ground down so that it can be used as a stripper for insulated wire, a cleaner or pencil sharpener. The tool is neatly finished and provided with a case that permits it to be conveniently carried in the pocket.

It has been our lot of late to chronicle quite a number of destructive fires in various parts of the country, devastating the business portions of enterprising towns and cities. In nearly every such instance some of our hardware friends have been among the victims. One of the latest towns to suffer a loss of this character is Washburn, Wis., across the bay from Ashland, which was visited by a serious conflagration on the 14th inst., causing an aggregate loss of $150,000. Included in the list of business houses destroyed is that of Peter Nelson, hardware merchant, whose loss is put at $15,000.

The New Ideal.

The annexed cut will give the reader an idea of a complete and compact implement for loading brass or paper shot-gun shells. This tool is being put on the market by the Ideal Mfg. Company, P. O. Box 1064 B, New Haven, Conn. Its operation is thus described: To expel the exploded caps unscrew threaded head C as far as it will go; slip up the rammer D, which will project pin at E ready for decapping. To recap, screw the head C down until the

The New Ideal.

point of screw at A is about flush (as in cut); start primer in pocket of shell, and place head of shell in slot B, and one-quarter of a turn of the rammer will force the primer home. The screw is quadruple thread, and travels ¼ inch in one turn. For extracting shells that may stick in gun put slot B over head of shell, and use rammer as a handle. When used as a rammer screw head C down as far as it will go; this will withdraw the decapping pin within the rammer, leaving all compact and the end flat. The operations are referred to as all simple and quick and efficient.

The Philadelphia Natural Gas Company, of Pittsburgh, has adopted a system of measurements by which it can estimate pretty accurately the exact amount of gas consumed by a large mill or manufactory in a year. By experiments the company has ascertained just how much gas at a certain furnace will pass out a certain sized orifice in a given time. Before any contracts are renewed or new ones made with manufacturers, expert measuremen are sent to the mill. Each furnace is carefully inspected, and all measurements and estimates reduced to writing for use of the company. After these have been carefully gone over, the price is given.

The Old Dominion Iron and Nail Works Company, of Richmond, Va., are distributing nails manufactured from the iron plates of the Confederate ram Merrimac, famous for its fight with the first monitor. They are in demand as mementoes of the first naval engagement of the civil war.

CURRENT HARDWARE PRICES.

SEPTEMBER 19, 1888.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

Ammunition.

Caps, Percussion, ₩ 1000—
Hicks & Goldmark's
F. L. Waterproof, 1-10's.....50¢
E. B. Trimmed Edge, 1-10's.....65¢ } dis 25@25&7½ %
E. B. Ground Edge, Central Fire, 1-10's, 70¢
Double Waterproof, 1-10's.....$1.40
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B.....30¢
Union Metallic Cartridge Co.
F. C. Trimmed.....50¢
F. L. Ground.....65¢ } dis 25@25&7½ %
Can. Fire Ground.....70¢
Double Waterproof.....$1.40
Double Waterproof, in 1-10's.....$1.40
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire.....$1.60

Cartridges—
Rim Fire Cartridges.....dis 50&5&2 %
Rim Fire Military.....dis 15&2 %
Central Fire, Pistol and Rifle.....dis 25&5&2 %
Central Fire, Military & Sporting....dis 15&5&2 %
Blank Cartridges, except 22 and 32 cal., an additional 10 % over above discounts.
Blank Cartridges .22 cal.....$1.75, dis 2 %
Blank Cartridges, 32 cal.....$3.50, dis 2 %
Primed Shells and Bullets.....dis 15&5&2 %
B. B. Caps, Round Ball.....$1.75, dis 2 %
B. B. Caps, Conical Ball, Swaged.....$2.00, dis 2 %

Primers—
Bergan Primers all sizes, and B. L. Caps (for Sturtevant Shells).....$1.00, dis 2 %
All other Primers, all sizes.....$1.20 dis 2 %

Shells—
First quality, 4, 8, 10 and 12 gauge.dis 25&10&2 %
First quality, 14, 16 and 20 gauge ($10 list).....dis 30&10&2 %
Star, Club, Rival and Climax Brands. 10 gauge, $9 list } ..dis 33⅓
12 gauge, $8 list } &10 2 %
Club, Rival and Climax Brands, 14, 16 and 20 gauge.....dis 30&10&2 %
Selbold's Combination Shot Shells.....dis 15&2 %
Brass Shot Shells, 1st quality.....dis 30&2 %
Brass Shot Shells, Club, Rival, Climax, 15 &2 %
A. R. & C. Co., I. X. L., 10 & 12 gauge...d s 40&5&2 %
A. B. & C. Co., "Special," 16 gauge...dis 30&1 &5&2 %
A. R. & C. Co. "Special," 10 & 12 gauge...40&10&2 %
Fowler's Patent, 10 & 12 gauge, ₩ 100.....$3.25

Small extras given by some dealers.

Shells Loaded—
List No. 10, 1887.....dis 20 & 10 %

Wads—
U. M. C. & W. R. A.—B. E., 11 up...$2.00
U. M. C. & W. R. A.—B. E., 9&10...2.30
U. M. C. & W. R. A.—B. E., 7&8...2.60
U. M. C. & W. R. A.—P. E., 11 up. 3.10
U. M. C. & W. R. A—P. E., 9&10.. 4.00
U. M. C. & W. R. A.—P. E., 7&8 ... 490
} D's 20&2 % With small extras.
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11 @ 20.....$2.80

Anvils.—Eagle Anvils.....₩ ℔ 10¢, dis 20 @ 20&5 %
Peter Wright's.....9¼¢
Armitage's Mouse Hole.....8¾¢
Armitage Mouse Hole, Extra.....11¼@11¾¢
Trenton.....9¼¢@9½¢
Wilkinson's.....9¼¢@10¢
J. & Riley Carr. Patent Solid.....11@11½¢

Anvil Vise and Drill—
Millers Falls Co.....$18.00, dis 20 %
Cheney Anvil and Vise.....dis 25 %
Allen Combined Anvil and Vise.....$3, dis 40&10 %
Moore & Barnes Mfg. Co.....dis 33⅓ %

Augers and Bits.

Douglass Mfg. Co.
New Haven Copper Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher)
} .....dis 70 %

Cook's, Douglass Mfg. Co.....dis 55 %
Cook's, New Haven Copper Co...dis 50&10@50&10&5 %
Ives' Circular Lip.....dis 60 %
Patent Solid Head.....dis 30 %
C. E. Jennings & Co., No. 10, extension l'p.....dis 40 %
C. E. Jennings & Co., No. 30.....dis 60 %
C. E. Jennings & Co., Auger Bits, in fancy boxes, ₩ set, 32½ quarters, No 5, $5; No. 30, $2.....dis 20 %
Lewis' Patent Single Twist.....dis 45 %
Russell Jennings' Augers and Bits.....dis 25 %
Imitation Jennings' Bits (new list).....dis 60@60&5 %
Pugh's Black.....dis 20 %
Car Bits.....dis 50&10@60 %
L'Hommedieu Car Bits.....dis 15&10 %
Forstner Pat. Auger Bits.....dis 10 %

Hollow Augers—
Ives'
French, Swift & Co.
Douglass'
} dis 35&10 @ 25&10&5 %
Bonney's Adjustable ₩ doz. $48.....dis 40&10 %
Stearns'.....dis 20&10 %
Ives Expansive, each $4.50.....dis 50&10 %
Universal Expansive, each $4.50.....dis 20 %
Wood's.....dis 25 @ 25&10 %

Expansive Bits—
Clark's small, $18; large, $26.....dis 35 @ 35&5 %
Ives' No. 4, per doz., $60.....dis 35 @ 40 %
Swan's.....dis 40 %
Steer's, No. 1, $26; No. 2, $22.....dis 35 %
Stearns' No. 2, $48.....dis 20 %

Gimlet Bits—
Common.....₩ gross $2.75 @ $3.25
Diamond.....₩ doz. $1.10, dis 25&10 %
"Bee".....dis 25 @ 25&5 %
Double Cut, Shepardson's.....dis 45 @ 45&5 %
Double Cut, Ct. Valley Mfg. Co.....dis 30&10 %
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass'.....dis 40&10 %
Double Cut, Ives'.....dis 60 @ 60&5 %

Bit Stock Drills—
Morse Twist Drills.....dis 50&10&5 %
Standard.....dis 50&10&5 %
Cleveland.....dis 50&10&5 %
Syracuse, for metal.....dis 50&10&5 %
Syracuse, for wood (wood list).....dis 30 @ 30&5 %
Williams' or Holt's, for metal.....dis 50&10&10 %
Williams' or Holt's, for wood.....dis 40&10 %

Ship Augers and Bits—
L'Hommedieu's.....dis 15&10 %
Watrous's.....dis 15&10 %
Snell's.....dis 15&10 %
Snell's Ship Auger Patt'n Car Bits, dis 15&10 %
} Extras often given.

Awl Hafts.

Sewing, Brass Ferrule.....$3.50 ₩ gross—dis 45&10 %
Patent Sewing, Short.....$1.00 ₩ doz—dis 40&10 %
Patent Sewing, Long.....$1.20 ₩ doz.—net
Patent Peg, Plain Top.....$10.00 ₩ gross—dis 45&10 %
Patent Peg, Leather Top.....$12.00 ₩ gross—dis 45&10 %

Awls, Brad Sets, &c.

Awls, Sewing, Common.....₩ gross $1.70—dis 35 %
Awls, Shouldered Peg....₩ gross $2.45—dis 40@40&10 %
Awls, Patent Peg.....₩ gross 63¢—dis 40@40&10 %
Awls, Shouldered Brad.....$2.70 ₩ gross—dis 35 %
Awls, Handled Brad.....$7.50 ₩ gross—dis 45 %
Awls, Handled Scratch.....$7.50 ₩ gross—dis 35&10 %
Awls, Socket Scratch.....$1.50 ₩ doz—dis 25 @ 30 %

Awl and Tool Sets.

Aiken's Sets, Awls & Tools, No. 20, ₩ doz. $10—dis 55&10 %
Gray's Ad. Tool Hdls., Nos. 1, $12; 2, $18.; 3, $12; 4, $9. dis 25@25&10 %
Miller's Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18, dis 25 %
Penry's Combination Haft.....₩ doz. $6
Brad Sets, No. 42, $10.50, No. 43, $12.50...dis 70&10&5 %
Brad Sets, Stanley's Excelsior, No. 1, $7.50.
Brad Sets, Stanley's Excelsior, No. 2, $4.00, } dis 30&10 %
Brad Sets, Stanley's Excelsior, No. 3, $5.50.

Axes.

Makers' and Special Brands—
First quality.....₩ doz. $6.00 @ $6.50
Others.....₩ doz, $5.50 @ $5.75

Axle Grease.

Fraser's, in bulk.....Keg ₩ ℔, 4¢; Pail, ₩ ℔, 5¢ net
Fraser's, in boxes.....₩ gross $9.50
Dixon's Everlasting, in bxs., ₩ doz., 1 ℔: $1.20; 2 ℔, $2
Dixon's Everlasting.....10-℔ pails, each, 86¢
Lower grades, special brands.....₩ gro $5.50 @ $7

Axles.—No. 1, 4¢ @ 4¼¢; No. 2, 5¼ @ 5½¢.

Nos. 7 to 18.....dis 50@55 %
Nos. 19 to 22.....dis 60&10&10@70 %
National Wrought Steel Tubular Self-Oiling:
Standard Farm (1 to 5) and Special Farm (A1 to A5)
Less than 10 sets.....dis 33⅓&5 %
Over 10 sets.....dis 33⅓&5 %
X Strong Exp. (6 to 9), & XX Strong Truck (10 to 16):
Less than 10 sets.....dis 10 %
Over 10 sets.....dis 10&5 %

Bag Holders.

Sprengle's Pat., ₩ doz $18.....dis 60 %

Balances.—Spring Balances.

Common 24 lb.....₩ doz., $1.50—dis 50 %
Chatillon's Spring Balances.....dis 50 %
Chatillon's Circular Spring Balances.....dis 60 %

Bells.

Hand—
Light Brass.....dis 70&10 %
Extra Heavy.....dis 66&10 %
White Metal.....dis 60&10&10 %
Silver Chime.....dis 33⅓&10 %
Globe (Cone's Patent).....dis 25&10 @ 35 %

Door—
Gong, Abbe's.....dis 33⅓&10 %
Gong, Yankee.....dis 45&10 %
Gong, Barton's.....dis 40&10 @ 50 %
Crank, Taylor's.....dis 25&10 %
Crank, Brooks'.....dis 50&10&2 %
Crank, Cone's.....dis 10 %
Crank Connell's.....dis 20&10 %
Lever, Sargent's.....dis 60&10 %
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....dis 25&10 %
Lever, R. E. ₩ Co.'s.....dis 50&10&2 %
Pull, Brook's.....dis 50&10&2 %
Pull Western.....dis 25&10 %

Cow—
Common Wrought.....dis 60&10 %
Western.....dis 20&10 %
Western, Sargent's list.....dis 70&10 %
Kentucky "Star".....dis 20&10 %
Kentucky, Sargent's list.....dis 70&10 %
Dodge, Genuine Kentucky, new list.dis 70@70&10 %
Texas Star.....dis 50&10 @ 50&10&5 %
Tall.....dis 40@40&5 %
Farm Bells.....₩ ℔, 3¢ @ 3½¢
Steel Alloy Church and School Bells.....dis 40 %

Bellows.—Blacksmiths'.....dis 60&10&5 @ 60 %

Molders'.....dis 40 @ 40&10 %
Hand Bellows.....dis 40&10 @ 10 %

Belting, Rubber.

Common Standard.....dis 70&10 %
Standard.....dis 70&70&5 %
Extra.....dis 60&10 %
N. Y. B. & P. Co., Standard.....dis 60&5 %
N. Y. B. & P Co., Extra Standard.....dis 50&10 %

Bench Stops.

Morrill's.....₩ doz $9—dis 50 %
Hotchkiss's.....₩ doz $5.00—dis 10 @ 10&10 %
Weston's, per doz No. 1, $10; No. 2, $9...dis 25&10&5 %
McGill's.....₩ doz $3—dis 10 %

Bits.—Auger, Gimlet Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders.

Extension, Barber's.....₩ doz $15.00—dis 40 @ 40&10 %
Extension, Ives'.....₩ doz $20.00—dis 50&5 @ 60&10 %
Diagonal.....₩ doz $24.00—dis 40 %
Angular.....₩ doz $24.00—dis 40&5 %

Blind Adjusters.

Domestic.....₩ per doz $3.00—dis 33⅓ %
Excelsior.....₩ doz $10.00—dis 50&10&2 %
Washburn's Self-Locking.....dis 20 @ 20&10 %

Blind Fasteners.

Mackrell's.....₩ doz pairs, $1.00—dis 20@20&10 %
Van Sand's Screw Pattern.....$15 ₩ gro.—dis 60&10 %
Van Sand's Old Pattern.....$15 ₩ gro.—dis 55&10 %
Washburn's Old Pattern.....$9 ₩ gro. net
Merriman's.....new list, net
Austin & Eddy No. 2008.....$9 ₩ gro. net
Security Gravity.....$9 ₩ gro. net

Blind Staples.

Barbed, ½ in. and larger.....₩ ℔ 7½ @ 8¢ net
Barbed, ⅝ in.....₩ ℔ 8½ @ 9¢ net

Blocks.

Ordinary Tackle, list April 17, '85.....dis 40 %
Cleveland Block Co., Mal. Iron.....dis 50 %
Novelty Tackle Blocks, Mal. Iron.....dis 50 %

Bolts.

Door and Shutter—
Cast Iron Barrel, Square, &c.....dis 70 @ 70&10 %
Cast Iron Shutter Bolts.....dis 70 @ 70&10 %
Cast Iron Chain (Sargent's list.....dis 65&10 %
Ives' Patent Door Bolts.....dis 60 %
Wrought Barrel.....dis 70 @ 70&10 %
Wrought Square.....dis 70 @ 70&10 %
Wr't Shutter, all Iron, Stanley's list.....dis 60&10 %
Wr't Shutter, Brass Knob, Stanley's.....dis 40&10 %
Wrought Shutter, Sargent's list.....dis 60&10 %
Wrought Sunk Flush, Sargent's list.....dis 55&10 %
Wrought Sunk Flush, Stanley's list.....dis 50&10 %
Wrought S. K. Flush, Com'n Stanley's list, dis 55&10 %

Carriage—
Com. list June 10, '84.....dis 75&2½&2 %
Genuine Eagle, list Oct., '84.....dis 75&10 %
Phila. pattern, list Oct. 7, 84...dis 75&10@75&10&5 %
R. B. & W. old list.....dis 70 %

Tire—
Common, list Feb. 28, 1883.....dis 70 %
P. C. B. & N. Co., Empire, list Feb. 28, 1883.....dis 70 %
P. C. B. & N. Co., Philadel., list Oct. 84.....dis 82½ %
P. C. B. & N. Co., Keystone, Phil. list Oct '84.....dis 80 %
P. C. B. & N. Co., Norway, Phil. list. Oct. '84.dis 75&10 %
Am. S. Co., Norway, Phil., list Oct. 16, '84...dis 75&10 %
Am. S. Co., Eagle, Phil., list Oct. 16, '84.....dis 80 %
Am. S. Co., Philadel. list. Oct. 16, 84.....dis 82½ %
Am. S. Co., Bay State, list Feb. 28, '83.....dis 70 %
R. B. & W., Philadel. list Oct. 16, 1884.....dis 82 %
R. & E. Mfg. Co.....dis 70 %

Stove and Plow—
Stove.....dis 62½ %
Plow.....dis 60&5 %
Am. S. Co. Stove, Annealed.....dis 62½ %
R. B. & W., Plow.....dis 55 %
R. B. & W., Stove.....dis 62½ %
R. & E. Mfg. Co., Stove.....dis 62½ %
Machine.....dis 75&10 @ 80 %
Bolt Ends.....dis 75&10 @ 80 %

Borax.....₩ ℔ 9¼@10½¢

Boring Machines.

Without Augers.	Upright.	Angular.
Douglass	$5.50	$6.75.....dis 50 %
Snell's, Rice's Patent	5.50	6.75, dis 40&10&10 %
Jennings	5.50	6.75, dis 45@45&10%
Other Machines	2.35	2.75.....net
Phillips' Pat., with Augers	7.00	7.50.....net

Bow Pins

Humason, Beckley & Co.'s.....dis 60&10 %
Sargent & Co.'s.....$17 and $18, dis 60&10 %
Peck, Stow & W. Co.....dis 50&10 @ 50&10&5 %

Braces.

Backus, Nos. 110 to 114 and 31 to 33...dis 60&5@60&10%
Backus, Nos. 5, 8, 12, 14.....dis 60&10&5 %
Backus, Nos. 16, 18, 20, 29, 7, 9, 11.....dis 70&10&5 %
Barber's, Nos. 10 to 16.....dis 50 %
Barber's, Nos. 30 to 33.....dis 50¢
Barber's, Nos. 40 to 63.....dis 50&10¢
Barker's, Nos. 8, 10 and 12.....dis 75&10@80 %
Barker's, Plated, Nos. 8, 10 and 12.....dis 65&10@70 %
Osgood's Ratchet.....dis 40&10@50 %
Spofford's.....dis 50&10 %
Ives' New Haven Novelty.....dis 70 @ 70&5 %
Ives' New Haven Ratchet.....dis 60&5 @ 60&10 %
Ives' Barber Ratchet.....dis 60&5 @ 60&10 %
Ives' Barbers.....dis 60&5 @ 60&10 %
Ives' Spofford.....dis 60&5 @ 60&10 %
Common Balt. American.....$1.10 @ $1.15
Bartholomew's, Nos. 25, 27, 30.....dis 50&10@60&5 %
Bartholomew's, Nos. 117, 118, 119.....dis 70 @ 70&5 %
Amidon's Barker's Imp'd Pla'n.....dis 75&10 @ 80 %
Amidon's Barker's Imp. Nickeled.....dis 65&10 @ 70 %
Amidon's Ratchet.....dis 75&10 @ 80 %
Amidon's Eclipse Ratchet.....dis 60 %
Amidon's Globe Jawed.....dis 40&40&10 %
Amidon's Corner Brace.....dis 40 @ 40&10 %
Amidon's Universal.....8 in., $2.10; 10 in., $2.25
Amidon's Buffalo Ball.....$1.10 @ $1.15
P. S. & W.....dis 50&10 %

Brackets.

Shelf, plain, Sargent's list.....dis 55&10 @ 55&10&10 %
Shelf, fancy, Sargent's list.....dis 60&10 @ 60&10&10 %
Reading, plain.....dis 60&10 @ 60&10&5 %
Reading, Rosette.....dis 60&10 @ 60&10&10 %

Bright Wire Goods.....dis 87½ @ 87½&10 %

Broilers.

Inch.	₩	10	₩ x 11
Per doz.	$4.50	5.50	6.50

Buckets.—See Well Buckets and Pails.

Bull Rings.—Union Co. Nut.....dis 55 %

Sargent's.....dis 60&10 @ 70&5 %
Hotchkiss' low list.....dis 30 %
Humason, Beckley & Co.'s.....dis 70 %
Peck, Stow & W. Co.'s.....dis 50&10 @ 50&10&10 %
Ellrich Hdw. Co., White Metal, low list.dis 50@50&10 %

Butcher's Cleavers.

Bradley's.....dis 25 @ 30
L. & I. J. White.....dis 20&5 %
Beatty's.....dis 40 @ 40&5 %

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

New Haven Edge Tool Co.'s.....dis 40
P. S. & W.....dis 33⅓&5@33⅓&10

Butts.

Brass—
Wrought Brass.....dis 70@70&10 %
Cast Brass, Tiebout's.....dis 33⅓ %
Cast Brass, Corbin's Fast.....dis 33⅓&10 %
Cast Brass, Loose Joint.....dis 33⅓&10 %

Cast Iron—
Fast Joint, Narrow.....dis 50&10
Fast Joint, Broad.....dis 55&10
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns.....
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned.....
Loose Pin, Acorns, Jap, Pltd. Tips.....
} .....dis 70&10

Wrought Steel—
Fast Joint, Narrow.....dis 70&10 %
Fast Joint, Lt. Narrow.....dis 70&10 %
Fast Joint, Broad.....dis 70&10 %
Loose Joint, Broad.....dis 70&10 %
Table Butts, Back Flaps, &c.....dis 70&10 %
Inside Blind, Regular.....dis 70&10 %
Inside Blind, Light.....dis 70&10 %
Loose Pin.....dis 70&10 %
Bronzed Wrought Butts.....dis 40&10@40&10&5 %

Calipers.—See Compasses.

Calks, Toe.

Gautier.....₩ ℔ 5½@6¢
Dewicks.....₩ ℔ 5½@6¢

Can Openers.

Messenger's Comet.....₩ doz $3.00, dis 25 %
American.....₩ gross $3.00
Duplex.....₩ doz 25¢, dis 15 @ 20 %
Lyman's.....₩ doz $3.75, dis 20 %
No. 4, French.....₩ doz $2.25, dis 55 @ 60 %
No. 5, Iron handle.....₩ gross $6.00, dis 45 @ 50 %
Eureka.....₩ doz $2.50, dis 10 %
Sardine Scissors.....₩ doz $2.75@$3 00 %
Star.....₩ doz $2.75 %
Sprague, No. 1 ₩; ₩, $2.25; ₩, $2.50.....dis 50&10&10 %

World's Best, ₩ gross, No. 1, $12.00; No. 2, $24.00, No. 3, $36.00.....dis 50&10 %
Universal.....₩ doz $2 00, dis 35&5 %
Domestic.....₩ doz $2.50, dis 45 %
Champion.....₩ doz $2.00, dis 50 %

Cards.
Horse and Curry.....dis 10&10 @ 10&10&10 %
Cotton.....New list, Aug., 1883, dis 10 @ 10&10 %
Wool.....dis 10 @ 10&10 %

Carpet Stretchers.
Cast Steel, Polished.....₩ doz $2.25
Cast Iron, Steel Points.....₩ doz 80¢
Socket.....₩ doz $1.75
Bullard's.....dis 25 @ 25&10 %

Carpet Sweepers.
Bissell No. 5.....₩ doz $17.00
Bissell No. 7 New Drop Pan.....₩ doz $19.00
Bissell Grand.....₩ doz $36 00
Grand Rapids.....₩ doz $24.00
Crown Jewel.....No. 1, $18; No. 2, $19; No. 3, $20
Magic.....₩ doz $15.00
Jewel.....₩ doz $17.00
Improved Parlor Queen, Nickeled Trimmings.....₩ doz $27.00
Improved Parlor Queen, Japanned Trimmings.....₩ doz $24.00
Excelsior.....₩ doz $22,00
Garland.....₩ doz $18.00
Parlor Queen.....₩ doz $24.00
Housewife's Delight.....₩ doz $15.00
Queen.....₩ doz $16.00
Queen, with band.....₩ doz $18.00
King.....₩ doz $30.00
Weed Improved.....₩ doz $18.00
Hub.....₩ doz $16.00
Cog Wheel.....₩ doz $16,00

Cartridges.—See Ammunition.

Casters.
Bed, Plate, Shallow Socket, Deep Socket, Yale Casters, list May, 1884.....New list; Brass...dis 55 @ 55&5 %; Others...dis 60 @ 60&5 %; dis 40&10 %
Martin's Patent (Phœnix).....dis 45&10 @ 50 %
Payson's Anti-friction.....dis 60 @ 60&10 %
"Giant" Truck Casters.....dis 10 @ 10&5 %
Stationary Truck Casters.....dis 45&10

Cattle Leaders.
Humason, Beckley & Co.'s.....dis 70 %
Sargent's.....dis 66⅔&10 %
Hotchkiss.....dis 30 %
Peck Blow & W. Co.....dis 50&10 %

Chain.
Trace, 6/4-10-3, exact sizes, ₩ pair, $1 03
Trace, 6/4-10-3, exact sizes, ₩ pair, .92
Trace .7-10-2, exact sizes...₩ pair, 1.11
dis 50&10&5 @ 60%
NOTE.—Traces. "Regular" sizes 3c net ₩ pair less than exact.
Log, Fifth, Stretcher, and other fancy Chains, list Nov. 1, 1884.....dis 50&10 @ 50&10&5 %
American Coil 3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ ¾
In cask lots. 8.75 6.25 5.00 4.50 4.40 4.00 3.75 3.50
Less than cask lots, add ½¢@¾¢ ₩ lb.
German Coil, list of June 20, 1887...dis 50&10&5&60 %
Ger. Halter Chain, list of June 20, 1887.....dis 50&10&5&60 %
Covert Halter, Hitching and Breast.....dis 50&2 %
Covert Traces.....dis 35@2 %
Oneida Halter Chain.....dis 60 @ 60&5 %
Galvanized Pump Chain.....₩ lb 5½¢ @ 6¢
Jack Chain, iron.....dis 70&10 @ 75 %
Jack Chain, Brass.....dis 65 @ 70 %

Chalk.—White.....₩ gro 50¢
Red.....₩ gro 70¢
Blue.....₩ gro 85¢
White Crayons.....₩ gro 12¢ @ 12½ dis 10¢

Chalk Lines.—See Lines.

Chisels.
Socket Framing and Firmer—
P., S. & W, New Haven and Middlesex, Mix.....dis 75&5 @ 75&10 %
Buck Bros.....dis 70 %
Merrill.....dis 60&10@60&10&5 %
L. & I. J. White.....dis 30 @ 30&5 %
Witherby and Douglass.....dis 75 @ 75&5 %
Tanged Firmers.....dis 40&10 %
Tanged Firmers, Butcher's.....$4.75 @ $5.00
Tanged Firmers, Spear & Jackson's.....$5.00 to $
Tanged Firmers, Buck Bros.....dis 30 %
Cold Chisels, ₩ lb.....16¢ @ 19¢

Chucks.
Scach Patent.....each, $5.00, dis 20 %
Morse's Adjustable.....each, $7.00, dis 20 @ 20&5 %
Danbury.....each, $6.00, dis 30 @ 30&5 %
Syracuse, Bals Pat.....dis 25 %

Clamps.
Providence Tool Co.'s Wrought Iron.....dis 25 %
Adjustable, Gray's.....dis 20 %
Adjustable, Lambert's.....dis 20 %
Adjustable, Snow's.....dis 40&5 %
Adjustable, Hammer's.....dis 15 %
Adjustable, Stearns'.....dis 20&10 %
Stearns' Adjustable Cabinet and Corner...dis 20&10 %
Cabinet, Sargent's.....dis 66⅔&10 %
Carriage Makers', Sargent's.....dis 70&10 %
Ebernard Mfg. Co.....dis 40&5 @ 40&10 %
Warner's.....dis 40&10 @ 40&10&5 %
Saw Clamps.....See Vises

Clips.
Norway, Axle, ¼ & 5-16.....dis 55&5&5
Second grade Norway Axle, ¼ & 5-16.....dis 65&5
Superior Axle Clips.....dis 60⅔&5 @ 60⅔&5&5 %
Norway Spring Bar Clips, 5-16.....dis 60&5&5
Wrought-Iron Felloe Clips.....₩ lb 5½¢
Steel Felloe Clips.....₩ lb 5¢
Baker Axle Clips.....dis 25 %

Cockeyes......dis 50 %

Cocks, Brass.—Hardware list.....dis 40&10&2 %

Coffee Mills.
Box and Side, List revised Jan. , 1888.....dis 50&2 %
American, Enterprise Mfg Co.....dis 20&10&30 %
The "Swift," Lane Bros.....dis 20&10 %

Compasses, Dividers, &c.
Compasses, Calipers, Dividers.....dis 70@70&10 %
Bemis & Call Co.'s Dividers.....dis 60&5 %
Bemis & Call Co.'s Compasses & Calipers....dis 50&5 %
Bemis & Call Co.'s Wing & Inside or Outside..dis 50&5 %
Bemis & Call Co.'s Double.....dis 60 %
Bemis & Call Co.'s (Call's Patent Inside).....dis 30 %
Excelsior.....dis 50 %
J. Stevens & Co.'s Calipers and Dividers.....dis 25&10 %
Starrett's Spring Calipers and Dividers.dis 25&10& 0 %
Starrett's Lock Calipers and Dividers.....dis 25 1 %
Starrett's Combination Dividers.....dis 25&10 %

Coopers' Tools.
Bradley's.....dis 20 %
Barton's.....dis 20@20&5 %
L. & I. J. White.....dis 20&5 %
Albertson Mfg. Co.....dis 25 %
Beatty's.....dis 40 @ 40&5 %
Sandusky Tool Co.....dis 30 @ 30&5 %

Corkscrews.
Humason & Beckley Mfg. Co.....dis 40 @ 40&10 %
Clough's Patent.....dis 33⅓ @ 33⅓&5 %
Howe Bros. & Hulbert.....dis 35 %

Corn Knives and Cutters.
Bradley's.....dis 10 %
Wadsworth's.....dis 25 ¢

Cradles.—Grain.....dis 50& 2 %

Crow Bars.—Cast Steel.....₩ lb 4¢
Iron, Steel Points.....₩ lb 3½¢

Curry Combs.
Fitch's.....dis 50&10 @ 50&10&10 %
Rubber.....₩ doz $10.00, dis 20 %
Perfect.....dis

Curtain Pins.—Silvered Glass.....net
White Enamel.....net

Cutlery.
Beaver Falls and Booth's.....dis 33⅓ %
Westenholme.....$7.75 to 8

Dampers, &c.
Dampers, Buffalo.....dis 50 %
Buffalo Damper Clips.....dis 50 %
Crown Damper.....dis 40 %
Excelsior.....dis 40&10 %

Dividers.—See Compasses.

Dog Collars.
Embossed Gilt, Pope & Stevens' list.....dis 30&10 %
Leather, Pope & Stevens' list.....dis 40 %
Brass, Pope & Stevens' list.....dis 40 %

Door Springs.
Torrey's Rod, regular size.....₩ doz $1.30
Gray's.....₩ gro, $30.00, dis 20 %
Bee Rod.....₩ gro, $30.00, dis 20 %
Warner's No. 1, ₩ doz. $2.50; No. 2, $1.30, dis 40&10&5 %
Gem (Coil), list April 19, 1886.....dis 10 %
Star (Coil), list April 19, 1886.....dis 20 %
Victor (Coil).....dis 60 @ 60&10 %
Champion (Coil).....dis 60&10 @ 60&10&10 %
Philadelphia.....5 in., $5.00; 8 in., $7.75, dis 30 %
Cowell's.....No. 1, ₩ doz $18.00; No. 2, $15.00, dis 50 %
Rubber, complete.....₩ doz $4.50, dis 55&10 %
Hercules.....dis 50 %
Shaw Door Check and Spring.....dis 25 @ 30 @ 35 %
Elliott's Door Check and Spring.....dis 25 %

Drawing Knives.
P., S. & W., Mix, New Haven and Middlesex.....dis 75&5 @ 75&10 %
Merrill.....dis 60&10&10 %
Witherby and Douglass.....dis 75@75&5 %
Watrous.....dis 15&10 @ 25 %
L. & I. J. White.....dis 25&5 %
Bradley's.....dis 35 %
Adjustable Handle.....dis 25 @ 33⅓ %
Wilkinson's Folding.....dis 25 @ 25&5 %

Drills and Drill Stocks.
Blacksmiths'.....each, $1.75
Blacksmiths' Self-Feeding.....each, $7.50, dis 20 %
Breast, P. S. & W.....dis 40&10 %
Breast, Wilson's.....dis 30&5 %
Breast, Millers Falls.....each, $3.00 dis 25 %
Breast, Bartholomew's... each, $2.50, dis 25&10 @ 40 %
Ratchet, Merrill's.....dis 20 @ 20 & 5 %
Ratchet, Ingersoll's.....dis 25 %
Ratchet, Parker's.....dis 20 @ 20&5 %
Ratchet, Whitney's.....dis 20&10 %
Ratchet, Weston's.....dis 20@25 %
Ratchet, Moore's Triple Action.....dis 25 @ 30 %
Whitney's Hand Drill, Plain, $11.00, Adjustable, $12.00.....dis 20&10 %
Wilson's Drill Stocks.....dis 1
Automatic Boring Tools.....each, $1.75 @ $1.65
Twist Drills—
Morse.....dis 50&10&5 %
Standard.....dis 50&10&5 %
Syracuse.....dis 50&10&5 %
Cleveland.....dis 50&10&5 %
Williams.....dis 50&10&10 %

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans.—Small sizes.....₩ lb 6¾¢
Large sizes.....₩ lb 6¼ ¢

Egg Beaters.
Dover.....₩ doz., $2.00
National.....₩ doz $4.50, dis 33⅓ %
Family (T. & S. Mfg. Co.).....₩ gro, $17.00@$18.00
Kingston (Standard Co.).....₩ gro, $6.50
Acme (Standard Co.).....₩ gro, 7.6.00
Duplex (Standard Co.).....₩ gro, $15.00
Duplex, extra heavy.....₩ doz extra $5.00
Rival (Standard Co.).....₩ gro, $12.00
Triumph (T. & S. Mfg. Co.).....₩ gro, 10.50@$11.50
Advance No. 1.....₩ gro $10.50
Advance, No. 2.....₩ gro $10.00
Bryant's.....₩ gro $15.00
Ayres' Spiral.....₩ gro $6
Double (Hamblin & Russell Mfg. Co.).....₩ gro, $16.20
Easy (Hamblin & Russell Mfg. Co.).....₩ gro, $14.00
Triple (Hamblin & Russell Mfg. Co.).....₩ gro, $16.20
Spiral (Hamblin & Russell Mfg. Co.).....₩ gro, $4.50
Paine, Diehl & Co's.....₩ gro $14.00

Egg Poachers.
Bullship Steam Egg Poachers, ₩ doz., No. 1, $6.00; No. 2, $9.00.....dis 25 %

Electric Bell Sets.—Wollensak's.....dis 15 %
Bigelow & Dowse.....dis 20 %

Emery.

	No. 4 to 46 gr.	No. 54 to 150 gr.	Flour, CF FF.
Kegs, ₩ lb	4 ¢	5 ¢	2½¢
½ kegs, ₩ lb	4¼¢	5¼¢	2¾¢
¼ kegs, ₩ lb	4½¢	5½¢	3 ¢
10-lb cans, 10 in case	6 ¢	6¾¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware.—See Hollow-Ware.

Escutcheon Pins.
Iron, list Nov. 11, 1885.....dis 50&10 @ 50&10&5
Brass.....dis 60 @ 60&5 %

Escutcheons.
Door Lock.....Same discounts as Door Locks
Brass Thread.....dis 60 @ 60&10 %
Wood.....dis 25 %

Faucets.
Fenn's.....dis 40 %
Bohren's Patent Rubber Ball.....dis 25 %
Fenn's Cork Stops.....dis 33⅓ %
Star.....dis 60 @ 60&5 %
Frary's Patent Petroleum.....dis 40&5&2 %
West's Patent Key.....dis 50&10 %
Anchor Lock.....dis 45 %
Metallic Key, Leather Lined...dis 60&10 @ 60&10&10 %
Cork Lined.....dis 7&5 @ 70&10 %
Burnside's Red Cedar.....dis 50 %
Burnside's Red Cedar, bbl. lots.....dis 50&10 %
J. Sommer's Peerless Best Block Tin Key.....dis 40 %
J. Sommer's IXL, 1st quality, Cork Lined.....dis 50 %
J. Sommer's Diamond Lock.....dis 40 %
J. Sommer's Perfection, Fla. Red Cedar.....dis 50 %
J. Sommer's Goodenough Cedar.....dis 60 %
Self-Measuring, Enterprise...₩ doz $36.00—dis 20&10 %
Self-Measuring, Lane's.....₩ doz $36.00—dis 25&10 %
Self-Measuring, Victor.....₩ doz $36.00—dis 25&10 %

Felloe Plates......₩ lb 6 @ 6¼¢

Fifth Wheels.—Derby and Cincinnati...dis 45&5 %

Files.
Domestic—
Nicholson Files, Rasps, &c.....dis 60&5 @ 60&10 %
Nicholson (X. F.) Files.....dis 25 %
Nichols n's Royal Files (Seconds)dis 75 (extra prices on certain sizes.)
Other makers, best brands.....dis 60&5 @ 60&10&5 %
Fair brands.....dis 60&10&10 @ 70 %
Second quality.....dis 70&5 @ 70 %
Heller's Horse Rasps.....dis 50&7½ @ 50&10 %
McCaffrey's Horse Rasps.....dis 50&10 %
Imported—
J. & Riley Carr.....List, April 1, 1883, dis 15 %
J. & Riley Carr Horse Rasps.....dis 10 %
Moss & Gamble.....List April 1, 1883, dis 15 %
Butcher.....Butcher's list, dis 20 %
Stubs.....Stubs list, dis 25 @ 30 %
Turton's.....Turton's list dis. 20 @ 25 %
Greaves' Horse Rasps.....American list d 60 %

Flu ing Machines.
Knox, 4¼-inch Rolls, Knox, 6-inch Rolls.....$3.25 each, $3.60 each } dis 35 %
Eagle, 3¼-inch Roll.....$2.15, dis 35 %
Eagle, 6¼-inch Roll.....2.85, dis 35 %
Crown, 4½-in., $3.50; 6-in, $4.00; 8-in., $6.50 each, dis 35 %
Crown Jewel.....6-in., $3.50 each, dis 35 %
American, 5-in., $3; 6-in., $3.40; 7-in., $4.50 each, dis 35 %
Domestic Fluter.....$1.50 each, net
Geneva Hand Fluter, White Metal...₩ doz $12, dis 25 %
Crown Hand Fluter, Nos. 1, $15; 2, $12.50; 3, $10, dis 30 %
Shepard Hand Fluter, No. 85.....₩ doz $15.30, dis 40 %
Shepard Hand Fluter, No. 110.....₩ doz $11, dis 40 %
Shepard Hand Fluter, No. 95.....₩ doz $8, dis 40 %
Clark's Hand Fluter.....₩ doz $15.00, dis 35 %
Combined Fluter and Sad Iron...₩ doz $15.00, dis 30 %
Buffalo.....₩ doz $10.00 dis 10 %

Fluting Scissors......dis 45 %

Fly Traps.
Paragon.....₩ doz $1.50 @ 1.75

Fodder Squeezers.
Blair's.....₩ doz $2.00
Blair's, "Climax".....₩ doz $1.25

Forks.—Hay, Manure, &c., Asso. list.....dis 60&5 %
Hay, Manure, &c., Phila. list.....dis 60 @ 60&5 %
Plated, see Spoons.

Freezers, Ice Cream.
Buffalo Champion.....dis 60&10&5 %
Shepard's Lightning.....dis 60 %
White Mountain.....dis 60 %

Fruit and Jelly Presses.
Enterprise Mfg. Co.....dis 20&10 @ 30 %
Henis.....₩ doz $4.50
P. D. & Co.....₩ doz $4.50
Shepard's Queen City.....dis 40 %

Fry Pans.
High List.....dis 75&5 @ 75&10&5 %

No.	0	1	2	3	4	5	6	7	8
₩ doz.	$3.75	4.70	5.30	5.95	6.55	7.50	8.75	10.00	11.25

Low List dis 70&10 %

No.	0	1	2	3	4	5	6	7	8
₩ doz.	$3.00	3.75	4.25	4.75	5.25	6 00	7.00	8.00	9.00

Fuse......₩ 1000 ft.
Common Hemp Fuse, for dry ground.....$2.70
Common Cotton Fuse, for dry ground.....2.35
Single Taped Fuse, for wet ground.....4.75
Double Taped Fuse, for very wet ground.....6.00
Triple Taped Fuse, for very wet ground.....7.25
Small Gutta Percha Fuse, for water.....7.50
Large Gutta Percha Fuse, for water.....12.00

Gauges.
Marking Mortise, &c.....dis 60&10 %
Starrett's Surface, Center and Scratch.....dis 25&10 %
Wire, low list.....dis 10&10 %
Wire, Wheeler, Madden & Co.....dis 10 %
Wire, Morse's.....dis 50 @ 50&5 %
Wire, Brown & Sharpe's.....dis 10 @ 20 %

Gimlets.—Nail and Spike.....dis 50&10&5 %
"Eureka" Gimlets.....dis 40&10 %
"Diamond" Gimlets.....₩ gross $5.00
Double Cut, Shepardson's.....dis 45 @ 45&5 %
Double Cut, Ives'.....dis 60 @ 60&5 %
Double Cut, Douglass'.....dis 40&10 %
"Bee".....₩ gross $12, dis 25 @ 25&5 %

Glue.—Le Page's Liquid.....dis 25 @ 25&5%
Upton's Liquid.....dis 35 %
W. N. Le Page's Improved Liquid Glue..dis25 @ 25&5 %

Glue Pots.
Tinned and Enameled.....dis 40&5 @ 40&10%
Family, Howe's "Eureka".....dis 40 %
Family, L. F. & C.'s "Handy".....dis 50 %

Grindstones.
Small, at factory.....₩ ton $7.50 @ 9.0

Grindstone Fixtures.
Sargent's Patent.....dis 70&10 %
Reading Hardware Co.....dis 30&10 %

Hack Saws.—See Saws.

Halters.—Covert's, Rope, ¼-in. Jute.....dis 50&2 %
Covert's, Rope, ¼-in., Hemp.....dis 40&2 %
Covert's Adj. Rope Halters.....dis 40&2 %
Covert's Hemp Horse and Cattle Tie.....dis 50&2 %
Covert's Jute Horse and Cattle Ties.....dis 60&10&2 %

Hammers.
Handled Hammers.
Maydole's.....List Dec. 1, 1885, dis 25 @ 25&1 0%
Buffalo Hammer Co., C. Hammond & Son, Humason & Beckley.....List Jan. 15, '87 Dis. 50 @ 50& 10 %
Atha Tool Co.....
Fayette R. Plumb.....dis 40&10 @ 50
Verree.....dis 5
Magnetic Tack, Nos. 1, 2, 8, $1.25, 1.50 & 1.75.dis 30&10 %
Nelson Tool Works.....dis 40&10 %
Warner & Nobles.....dis 20 @ 25 %
Peck, Stow & Wilcox.....dis 40 %
Sargent's.....dis 33⅓&10 %
Heavy Hammers and Sledges—
3 ℔ and under.....₩ lb 40¢
3 to 5 ℔.....₩ lb 36¢
Over 5 ℔.....₩ lb 30¢
dis 70 & 10 @ 75 %
Wilkinson's Smiths'.....10½¢ @ 11¢ ₩ ℔

Hand Cuffs and Leg Irons.
Providence Tool Co., Hand Cuffs, $15.00 ₩ doz...dis 10%
Providence Tool Co. ,Leg Irons, $25.00 ₩ doz....dis 10%
Tower's.....dis 25 %
Daley's Improved Hand Cuffs: 2 Hands, Polished, ₩ doz, $18; Nickeled, $27; 3 Hands, Polished, ₩ doz. $72; Nickeled, $34.....dis 25 %

Handles.
Iron, Wrought or Cast.—
Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.18	1.35	1.50

....dis 60&10&10
Roggin's Latches.....₩ doz. 30¢ @ 3
Bronze Iron Drop Latches.....₩ doz. 70¢ net
Jap'd Fire Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88.....net
Barn Door.....₩ doz. $1.40, dis 10&10 %
Chest and Lifting.....dis 70 %
Handles, Wood—
Saw and Plane.....dis 40&10 @ 40&10&5 %
Hammer, Hatchet, Axe, Sledge, &c.....dis 35 %
Brad Awl.....gross $2.00
Hickory Firmer Chisel, assorted.....gross 4.50
Hickory Firmer Chisel, large.....₩ gross 4.0
Apple Firmer Chisel, assorted.....₩ gross 5.00
Apple Firmer Chisel, large.....₩ gross 6.00
Socket Firmer Chisel, assorted.....₩ gross 3.00
Socket Framing Chisel, assorted.....₩ gross 5.00
dis
J. B. Smith Co.'s Pat. File.....dis 50 %
File, assorted.....₩ gross 2.25
Auger, assorted.....₩ gross 5.00
Auger, large.....₩ gross 7.00
dis 40 @ 40&10 %
Patent Auger, Ives'.....dis 30&10 %
Patent Auger, Douglass'.....₩ set $1.25 net
Patent Auger, Swan's.....₩ set $1.00 net
Hoe, Rake, Shovel, &c.....dis 50&10 %
Cross Cut Saw Handles—
Atkins' No. 1 Loop, ₩ pair, 30¢ No. 3, 22¢; No. 3 and No. 4 Reversible, 22¢.
Boynton's Loop Saw Handles.....50¢, dis 60 %
Champion.....15¢

Hangers.
Barn Door, old patterns.....dis 60&10&10 @ 70 %
Barn Door, New England.....dis 60&10&10 @ 70 %
Samson Steel Anti-Friction.....dis 5& %
Orleans Steel.....dis 5& %
Hamilton Wrought Wood Track.....dis 5& %
U. S. Wood Track.....dis 6& %
Champion.....dis 60&10 @
Rider and Wooster, Medina Mfg. Co.'s list.....dis 70 %
Climax Anti-Friction.....dis 5& %

Climax Steel Anti-Friction ... dis 50 %
Zenith for Wood Track ... dis 55 %
Reed's Steel Arm ... dis 5 %
Challenge Barn Door ... dis 50 %
Sterling Improved (Anti-Friction) ... dis 45&10 %
Victor, No. 1, $15; No. 2, $16.50; No. 3, $18... dis 50&5 %
Cheritree ... dis 5%10 %
Kidder's ... dis 50&10 @ 60 %
The "Boss" ... dis 60 %
Best Anti-Friction ... dis 60 %
Duplex (Wood Track) ... dis 60 %
Terry's Patent ... ₩ doz. DP. 4 in. $10; 5 in., $12 ... dis 50&5 %
Cronk's Patent....No. 4, $12; No. 5, $14.40; No. 6, $18 ... dis 50&10 %
Wood Track Iron Clad ... ₩ ft. 10¢, dis 50&15 @ 60 %
Carrier Steel Anti-Friction ... dis50 @ 50&5 %
Architect ... ₩ set $6.00, dis 20 %
Eclipse ... dis 20&10
Fel'x ... ₩ set $6.50, dis 20 %
Richards' ... dis30&30&10 %
Lane's Steel Anti-Friction ... dis 40&10 %
The Ball Bearing Door Hanger ... dis 20&10 @ 25&10 %
Warner's Patent ... dis 20@20&10 %
Stearns' Anti-Friction ... dis 20 @ 20&10 %
Stearns' Challenge ... dis 25&10 @ 25&10&10 %
Faultless ... dis 40 @ 40&5 %
American ... ₩ set $6; dis 20&10 %
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢ ... dis 40 %
Paragon, Nos. 1, 2 and 3 ... dis 40&10 %
Paragon, Nos. 5, 6½, 7 and 8 ... dis 20&10 %
Crescent ... dis 60@60&10 %
Nickel Cast Iron ... dis 50 %
Nickel Malleable Iron and Steel ... dis 60 %
Scranton Anti Friction Single Strap ... dis 33⅓ %
Screw on Anti-Friction Double Strap ... dis 40 %
Universal Anti Friction ... dis 40 %
Wild West, 4 in. wheel, $15; 5 in. wheel, $21... dis 45 %
Star ... dis 4 &10 @ 40&10&5 %
May ... dis 50&5 @ 50&10 %

Harness Snaps —See Snaps.

Hatchets —List Jan 1, 1886.

Isaiah Blood ... dis 35 @ 40%
Hunt's Shingling Lath and Claw ... dis 40&5 %
Hunt's Broad ... dis 40 %
Buffalo Hammer Co ... dis 40&10@50 %
Hurd's ... dis 40&10 @ 50 %
Fayette R. Plumb ... dis 40&10 @ 50 %
Wm. Mann, Jr., & Co ... dis 50 @ 50&5%
Underhill Edge Tool Co ... dis 40&5 @ 40&10 %
Underhill's Haines and Bright goods ... dis 33⅓ %
C. Hammond & Son ... dis 40&10 @ 50 %
Simmons ... dis 40&10 @ 50 %
Peck's ... dis 40&10 @ 40&10&5 %
Kelly's ... dis 50@50&5 %
Sargent & Co ... dis 50 %
Ten Eyck Edge Tool Co ... dis 40&10@40&10&5 %
Collins, following list ... dis 10 %

Shingling, Nos. 1 2 3	₩ doz	$5.50	$6.00	$6.50
Claw, Nos. 1 2 3	₩ doz	6.00	6.50	7.00
Lathing Nos. 1 2 3	₩ doz	5.50	6.00	6.50

Hay Knives.

Lightning ... Mfrs. price ₩ doz $18, dis 25 %
Jobber's Extras
Electric ... ₩ doz $17 } dis 30 @
Gem ... ₩ doz $18 } 30&5%
Wadsworth's ... dis 40&7½ @ 40&10 %
Carter's Needle ... ₩ doz $11.50 @ $12.00
Heath's ... ₩ doz $13.50 @ $14.00

Hinges.

Wrought Iron Hinges—

Strap and T ... dis 70&10&5 @ 70&10&10 %
Screw Hook and Strap { 6 to 12 in. ₩ ₩ ... 3½¢ ; 14 to 20 in., ₩ ₩ ... 3½¢ ; 22 to 36 in., ₩ ₩ ... 2½¢
Heavy Welded Hook { 6 to 12 in., ₩ ₩ ... 3½¢ ; 14 to 20 in., ₩ ₩ ... 3½¢ ; 22 to 36 in., ₩ ₩ ... 2½¢
Screw Hook and Eye { ½ in. ₩ dos $1.50 ; ⅝ in. ₩ dos $2.45 ; ¾ in. ₩ dos $3.80 } dis 10%
Rolled Blind Hinges, Nos 32 and 34 ... dis 50&10
Rolled Blind Hinges, Nos. 232 and 234 ... dis 55&10 %
Rolled Plate ... dis 70&10 %
Rolled Raised ... dis 70&10
Plate Hinges ¼, 10 & 12 in., ₩ ₩ ... 5
"Providence" over 12 in., ₩ ₩ ... 4

Spring Hinges—

Geer's Spring and Blank Butts ... dis 40
Union Spring Hinge Co.'s list, March, 1886 ... dis 20 %
Acme and U. S ... dis 30 %
Empire and Crown ... dis 20 %
Hero and Monarch ... dis 50 %
American, Gem, and Star, Japanned ... dis 20 %
American, Gem, and Star, Bronzed ... net
Oxford, Bronze and Brass ... net
Barker's Double Acting ... dis 20&10 %
Union Mfg. Co ... dis 25 %
Bommer's ... dis 30 %
Buckman's ... dis 15@20 %
Chicago ... dis 30 %

Gate Hinges—

Western ... ₩ doz $4.40, dis 55 %
N E ... ₩ doz $7.00, dis 55 %
N. E. Reversible ... ₩ doz $5.20, dis 55&10 %
Clark's, Nos. 1 2 3 ... dis 60&10&5 %
N. Y. State ... ₩ doz $5.00, dis 55&10 %
Automatic ... ₩ doz $12.50, dis 50 %
Common Sense ... ₩ doz pair $4.50, dis 50 %
Seymour's ... dis 45&10 %
Shepard's ... dis 60&10&5 %
Reed's Latch and Hinges ... ₩ doz sets $12, dis 50 %

Blind Hinges—

Parker ... dis 75&2 %
Palmer ... dis 50&5&10 %
Seymour ... dis 70&2 %
Nicholson ... dis 45&10 %
Huffer ... dis 50 %
Clark's, Nos. 1, 3, 5, 40 and 50 ... dis 75&10&5@80 %
Clark's Mortise Gravity ... dis 50 %
Sargent's, Nos. 1, 3, 5, 11, 13... dis 75&10@75&10&5 %
Sargent's No. 12 ... dis 75&10&10 %
Reading's Gravity ... dis 75&10 @ 75&10&5 %
Shepard's Noiseless Sligars Buffalo, Champion, Steamboat, Clark's Old Pattern and Clark's Tip Pattern ... dis 75&10&5 %
Shepard's O. S, Lull & Porter ... dis 75&10 %
Shepard's Acme, Lull & Porter ... dis 75&5 %
Shepard's Queen City Reversible ... dis 75 %
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3 ... dis 75&10&2½ %
North's Automatic Blind Fixtures, No. 2, for Wood, $10.50; No. 3, for Brick, $13.50... dis 25&2 %

Hoes.

Handled—

Garden, Mortar, &c ... dis 65&5 %
Planter's, Cotton, &c ... dis 65&5 %
Warren Hoe ... dis 60 %
Magic ... ₩ doz $4.2

Eye—

D. & H. Scovil ... dis 20 %
Lane's Crescent Scovil Pattern ... dis 45 %
Lane's Crescent Planters Pattern ... dis 45 & 5 %
Lane's Razor Blade, Scovil Pattern ... dis 30 %
Maynard, S. & O. Pat ... dis 45&5 %
Sandusky Tool Co., " " ... dis 60 %
Hubbard & Co., " " ... dis 60 %
Bare " " ... dis 60 %
Grub ... dis 60 @ 60&10 %

Hog Rings and Ringers.

Hill's Improved Ringers ... ₩ dos. $4.50
Hill's Old Style Ringers ... ₩ dos. $3.00
Hill's Tongs ... ₩ dos. $4.50
Hill's Rings ... ₩ doz boxes, $2.25 @ 2.40
Perfect Rings ... ₩ doz boxes $1.75 @ 2.00
Perfect Ringers ... ₩ doz. $2.50
Blair's Hog Ringers ... ₩ doz. $2.6 @ $2.85
Blair's Hog Rings ... ₩ doz. 90¢ @ 1.00
Champion Ringers ... ₩ doz. $2.00
Champion Rings, Double ... ₩ doz. $2.25
Brown's Ringers ... ₩ doz. $2.00
Brown's Rings ... ₩ doz. $1.25 @ 1.30

Hoisting Apparatus

"Moore's" Hand Hoist, with Lock Brake ... dis 70 %
"Moore's" Differential Pulley Block ... dis 40 %

Holders, File and Tool.

Rail Pat ... ₩ doz $4 ; dis 25 %
Nicholson File Holders ... dis 20 %

Hollow-Ware.

Iron—

Stove Hollow-Ware, Ground ... dis 60&10@60&10&5 %
Stove Hollow-Ware, Unground ... dis 70&5@70&10 %
Enameled and Tinned Hollow-Ware—
Kettles ... dis 70 @ 70&5 %
Oval Boilers, Saucepans & Glue Pots ... dis 40&5 @ 40&10 %
Gray Enameled Ware ... dis 40 @ 40&5 %
Agate and Granite Ware ... dis 25 %
Rustless Hollow-Ware ... dis 50 @ 50&5 %
Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Silver Plated—4 mo. or 5 % cash in 30 days.

Reed & Barton ... dis 40&5 %
Meriden Brittania Co ... dis 40&5 %
Simpson, Hall, Miller & Co ... dis 40&5 %
Rogers & Brother ... dis 40&5 %
Hartford Silver Plate Co ... dis 40&5&5 %
William Rogers Mfg. Co ... dis 40&5&5 %

Hooks.

Cast Iron—

Bird Cage, Sargent's list ... dis 60&10&10 %
Bird Cage, Reading ... dis 60&10&10 %
Clothes Line, Sargent's list ... dis 60&10&10
Clothes Line, Reading list ... dis 60&10 @ 60&10&10 %
Ceiling, Sargent's list ... dis55&10&10 %
Harness, Reading list ... dis 55&10 @ 55&10&10 %
Coat and Hat, Sargent's list ... dis 60&10 @ 60&10 %
Coat and Hat, Reading ... dis 50&10 @ 50&10&10 %

Wrought Iron—

Cotton ... ₩ dos $1.2
Cotton Pat. (N. Y. Mallet & Handle W'ks) ... dis 30 %
Tassel and Picture (T. & S. Mfg. Co.) ... dis 50 %
Wrought Staples, Hooks, &c ... See Wrought Goods
Bench Hooks ... See Bench Stops

Wire—

Wire Coat and Hat, Gem, list April, 1886 ... dis 45
Wire Coat and Hat Mules', list April, 1886 ... dis 45
Indestructible Coat and Hat ... dis 45 %
Wire Coat and Hat, Standard ... dis 45 %
Belt ... dis 75&10 @ 80 %
Grass ... ₩ doz $2.0
Bush ... dis 55 @ 60 %
Whiffletree—Patent ... dis 55 %
Hooks and Eyes—Malleable iron ... dis 70 @ 70&10 %
Hooks and Eyes—Brass ... dis 60&10&10 %
Fish Hooks, American ... dis 50 %

Horse Nails.

Nos.	6	7	8	9	10	
Ausable	28¢	26¢	25¢	24¢	23¢	dis 25&10@25&10&10 %
Clinton, Fin	24¢	22¢	21¢	20¢	19¢	dis 40&10 @ 50 %
Essex	28¢	26¢	25¢	24¢	23¢	dis25&10@25&10&10
Lyra	25¢	23¢	22¢	21¢	20¢	dis 40&10&c@50 %
Snowden	25¢	23¢	22¢	21¢	20¢	dis 40&10&25@50 %
Putnam	24¢	22¢	21¢	20¢	19¢	dis 5&10@25½@25½ %
Vulcan	23¢	21¢	20¢	19¢	18¢	dis 12½&5 %
Northwest'n	25¢	23¢	22¢	21¢	20¢	dis 10&10&5&5 %
Globe	23¢	21¢	20¢	19¢	18¢	dis 12½&5&5 %
A. C	25¢	23¢	22¢	21¢	20¢	dis 25&10 @ 33⅓&5 %
C. B.-K	25¢	23¢	22¢	21¢	20¢	dis 25&10 @ 33⅓&5 %
Champlain	28¢	26¢	25¢	24¢	23¢	dis25&10&10 %
New Haven	28¢	26¢	25¢	24¢	23¢	dis25&10@25&10&10 %
Saranac	23¢	21¢	20¢	19¢	18¢	dis 90&10 %
Champion	25¢	23¢	22¢	21¢	20¢	dis 10&10&10
Capewell	28¢	26¢	25¢	24¢	23¢	dis 35&5 @ 35&10 %
Star	23¢	21¢	20¢	19¢	18¢	dis 10&10@10&12½ %
Anchor	23¢	21¢	20¢	19¢	18¢	dis 35 %
Western	23¢	21¢	20¢	19¢	18¢	dis 40&10 %
Empire Bronzed						14 per lb.

Horse Shoes —See Shoes, Horse.

Hose, Rubber, competition ... 75&10 @ 75&10&5 %
Standard ... dis 70&7 &10 %
Extra ... dis 60 @ 60&10 %
N. Y. B. & P. Co., Para ... dis 5&10 %
N. Y. B. & P. Co., Extra ... dis 50 %
N. Y. B. & P. Co., Dundee ... dis 60&10&5 %

Huskers.

Blair's Adjustable ... ₩ gross $8.00
Blair's Adjustable Clipper ... ₩ gross 7.00

Ice Picks, Chisels, &c.

Am. Ice Chisel Pol'd. ... ₩ doz $3.00, dis 2 @20&5 %
National Ice Chisel ... ₩ doz $5.25, dis 20 %
Novelty Ice Breakers ... ₩ doz $6.25, dis 20 %
Dunlap's Ring Picks ... ₩ doz $2.00, dis 15 %
Wood Head Picks, Sargent's ... ₩ doz $1.60, dis 50&10 %
Iron Head Picks, Sargent's ... ₩ doz $1.85, dis 50&10 %
Ice Mallets, Pick in handle ... ₩ doz $2.00, dis 15 %
Ice Axes, Small Cast or Mall ... ₩ doz $1.25, dis 20&10 %
Combination Ice Tools ... ₩ doz $2.00 net
Acme Ice Pick and Tongs ... ₩ gross $55.00, dis 50&10 %
Roger's Lightning Ice Chisel ... ₩ gross $28.50

Ice Tongs.

Champion, S. S. & Co ... ₩ doz $4.00, dis 25&10 %
Family ... ₩ doz $3.75, dis 20@25 %

Jack Screws.—See Screws.

Kettles.

Brass, 7 to 17 in., ₩ ₩	Spun.	Stamped.
	24¢	21 ¢
Brass larger than 17 inches, ₩ ₩	26¢	23½¢

Enameled and Tea Kettles ... See *Hollow Ware*

Keys.

Lock Asso'n list Dec. 30, 1886 ... dis 50&10 @ 60&5 %
Eagle, Cabinet, Trunk and Padlock ... dis 33⅓&2 %
Hotchkiss' Brass Blanks ... dis 40 %
Hotchkiss' Copper and Tinned ... dis 40 %
Hotchkiss' Padlock and Cabinet ... dis 35 %
Ratchet Bed Keys ... ₩ doz $4.00, dis 15 %

Knife Sharpeners.

Parkin's Applewood Handles ... ₩ doz $6.00, dis 40 %
Parkin's Rosewood or Cocobolo ... ₩ dos $9.00, dis 40 %

Knives.

Wilson's Butcher Knives ... dis 20 @ 25 %
Ames' Butcher Knives ... dis 25 %
Nichols' Butcher Knives ... dis 40&1
Ames' Shoe Knives ... dis 20@25 %
Ames' Bread Knives ... ₩ doz $1.50, dis 15 @ 20 %
Moran's Shoe and Bread Knives ... dis 20 %
Hay and Straw ... See Hay Knives
Table and Pocket ... See Cutlery

Knobs.

Door Mineral ... 65@68
Door Por. Jap'd ... 75@78
Door Por. Por. Nickel ... $2.00 @ 2.25
Door Por. Plated, Nickel ... $2.00 @ 2.25
Drawer, Porcelain ... dis 55&10&10&5 @ 5&10&10 %
Hemacite Door Knobs, new list ... dis 40&10&50 %
Yale & Towne Wood Knobs, list Dec., 1885 ... dis 40 %
Furniture Plain ... 75¢ gross inch dis 10 %
Furniture, Wood Screws ... dis 25&10 %
Base, Rubber Tip ... dis 70&10&5 %
Picture, Judd's ... dis 60&10&10 @ 70 %
Picture, Sargent's ... dis 70 &10 %
Picture, Hemacite ... dis 35&5 %
Shutter, Porcelain ... dis 65&10 %
Carriage, Japanned ... ₩ gross 80¢, dis 60&10 %

Ladies.

Melting, Sargent's ... dis 55&10%
Melting, Reading ... dis 35&10%
Melting, Monroe's Patent ... ₩ doz. $4.00, dis 40%
Melting, P. S. & W ... dis 35&10 @ 40%
Melting, Warner's ... dis 30%

Lawn Mowers.

Standard List ... dis 50&10 %
Enterprise ... dis 60&10 %

Lanterns.

Tubular, Plain with Guards ... ₩ dos $4.00 @ $4.25
Tubular, Lift Wire, with Guards ... ₩ dos $4.50 @ $4.75
Tubular, Square Plain, with Guards, ₩ doz $4.00 @ $4.25
Tubular, Sq Lift Wire, with Guards, ₩ doz $4.25 @ $4.50
Without Guards, 25¢ ₩ dozen less.
Police, Small, $6.00; Med. $7.25; Large, $9.75, dis 20@25¢

Lemon Squeezers.

Porcelain Lined, No. 1 ... ₩ doz. $6.00, dis 25&30 %
Wood, No. 2 ... ₩ doz. $3.00, dis 35 %
Wood, Common ... ₩ doz $1.70 @ 1.75
Dunlap's Improved ... ₩ doz. $3.75, dis 20 ¢
Sammis ... No. 1, $5; 2, $9; 12, $18 ₩ doz. dis 25&10 ¢
Jennings' "Star" ... ₩ doz $2.50
The "Boss" ... ₩ doz $2.50
Dean's ... Nos. 1, ₩ doz $6.00; 2, $8.35; 3, $1.90
Little Giant ... dis 50 @ 50&5 %
King ... dis 40&5 %

Lines.

Cotton and Linen Fish, Draper's ... dis 50 %
Draper's Chalk ... dis 60 %
Draper's Mason's Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25... dis 25 %
Cotton Chalk ... dis 55 %
Samson, Cotton, No. 4, $3; No. 4½, $2.50 ... dis 10 %
Silver Lake, Braided, Nos. 0, $6.00 No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gross ... dis 25 %
Masons' Linen, No. 3½, $1.50; No. 4, $2; No. 4½, $2.50
Masons' Colored Cotton ... dis 45
Wire Clothes, No. 18, $3.60; No 19, $3.00; No. 20, $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton ... $7.50 ₩ doz. dis 20 %

Locks, Padlocks, Cabinet Locks, &c.

Door Locks, Latches, &c.—

List, Dec. 30, '86, chgd Feb. 2, '87 ... dis 50&10 @ 60&5 %
Note.—Lower net prices often made.
Mallory, Wheeler Co., list, July, 1888 ... dis 50&10&2 %
Sargent & Co. (list Aug. 1, 1888) ... dis 55&2&10 %
Reading Hardware Co. (list Feb. 2, '88) dis 55@60&10 %
Livingston & Co ... dis 70 %
Perkins' Burglar Proof ... dis 60&25 %
Plate ... dis 33⅓&2 %
F. Many's "Extension Cylinder" ... $10.50 ₩ doz
Barnes Mfg. Co ... dis 40 %
Yale Corrugated Key ... dis 33⅓ %
Dietz Flat Key ... dis 30 %
L. & C. Round Key Latches ... dis 30&10 %
L. & C. Flat Key Latches ... dis 33⅓&10 %
Romer's Night Latches ... dis 15 %
Yale new list ... dis 33⅓ %
"Shepardson" or "U. S" ... dis 35 %
"Felter" or "American" ... dis 40&10 %
Reed's N. Y. Hasp Lock ... dis 25 %

Cabinet—

Eagle, Gaylord Parker and Corbin, } List March, '84, revised Jan. 1, '85. dis 33⅓&2 %
Dietz, Nos. 36 to 39 ... dis 40 %
Dietz, Nos. 51 to 63 ... dis 40 &10 %
Dietz, Nos. 86 to 90 ... dis 30 %
Stoddard Lock Co ... dis 30 @ 33⅓ %
"Champion" Night Latches ... dis 40 %
Barnes Mfg. Co ... dis 40 %
Eagle and Corbin Trunk ... dis 25&2 %
"Champion" Cabinet and Combination ... dis 33⅓ %
Yale ... dis 33⅓ %
Romer's ... dis 25 %

Padlocks—

List, Dec. 23, 84 ... dis 75 @ 75&10 %
Yale Lock Mfg. Co.'s ... dis 33⅓ %
Eagle ... dis 25&2 %
Eureka, Eagle Lock Co ... dis 40&2 %
Romer's, Nos. 0 to 91 ... dis 30 %
Romer's Scandinavian, &c, Nos. 100 to 505 ... dis 15 %
A. E. Dietz ... dis 40 %
"Champion" Padlocks ... dis 40 %
Hotchkiss ... dis 30 %
"Star" ... dis 45 %
"Horse Shoe," ₩ doz. $9 ... dis 40 %
Barnes Mfg. Co ... dis 40 %
Nock's ... dis 30 %
Brown's Patent ... dis 25 %
Scandinavian ... dis 90 @ 90&10 %
Graim's Pat. Scandinavian new list (low) ... dis 60 %

Lumber Tools.

Log Peavies, "Blue Line" Finish ... ₩ doz $20.00
Log Peaves, Common Finish ... ₩ doz $18.00
Steel Socket Peavies ... ₩ doz $21.00
Mall. Iron Socket Peavies ... ₩ doz $19.00
Cant Hooks, "Blue Line" Finish ... ₩ doz $16.00
Cant Hooks, Common Finish ... ₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish ... ₩ doz $16.00
Cant Hooks, Mall. Socket Clasp Common Finish ... ₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Fin. ₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish ... ₩ doz $12.00
Hand Spikes ... ₩ doz 6 ft., $15.00; 8 ft., $20
Pike Poles, Pike & Hook, 12 ft. 14 ft. 16 ft. 18 ft. 20 ft. ₩ doz ... $11.50 12.50 14.50 17.50 21.50
Pike Poles, Pike only, ₩ doz ... 10.00 11.00 13.00 16.00 20.00
Pike Poles not ironed, ₩ doz ... 6.00 7.00 9.00 12.00 16.0
Setting Poles, ₩ doz ... 14.00 15.00 17.00 ...
Swamp Hooks ... ₩ doz $18.00
Landing Blocks ... ₩ doz $22.50
Skidding Tongs ... ₩ doz $51.00
Log Binders ... ₩ doz $26.00
Bended Boot Calks, 1 to 5 M, dis 25 %; 5 to 10 M, dis 30 %
Square Steel Boot Calks ... dis 40 %
Chain Rafting Dogs ... ₩ 100 $12.50
Ring Rafting Dogs ... ₩ 100, med., $10.00; large, $12.00
Timber Grapples ... ₩ doz $30.00

Lustre.

Four-ounce Bottles ... ₩ dos. $1.75 ₩ gro. $17. 00

Mallets.

Hickory ... dis 20&10@20&10&10 %
Lignumvitæ ... dis 20&10&20&10&10 %
B. & L. Block Co, Hickory and L. V ... dis 30 @ 30&10

Match Safes.

Dangerfield's Self-Igniting ... ₩ doz $1.2

Mattocks.—Regular list ... dis 60&10 @ 60&10&5

Meat Cutters

Dixon's—Nos.	1	2	3	4	
₩ dos	$14.00	17.00	19.00	30.00	dis 45 %
Woodruff's Nos.	100	150			
₩ dos.	$15.00	18.00			dis 45
Champion Nos.	200	300	400		
₩ dos.	$22.00	27.00	40.00		dis 45
Hales' Pattern Nos.	11	12	13		
₩ dos	$27.00	33.00	45.00		dis 70 & 70&5 %

American ... dis

Nos.	1	2	3	4B	
Each	$5.00	7.00	10.00	25.00	50.00 60.00
Enterprise					dis 30
Nos.	10	12	22	32	42
Each	$3.	3.50	4.00	6 00	15.00

Pennsylvania.....dis 40&10%
Nos. 1 2 3 00
$ doz. $34.00 28.00 36.00 28.00
Miles' Challenge..Nos. 1 2
$ doz. $12.00 30.00 40.00—dis 45@45&10 %
Home No. 1.....$26 $ doz, dis 55&10 %
Draw Cut..Nos. 5 2 0 8
Each...$50.00 75.00 80.00 225.00—dis 20 @ 25 %
Beef Shavers Enterprise Mfg. Co.'s...dis 20&10 @ 30 %
Chadborn's Smoked Beef Cutter.....$ doz. $66.00

Mincing Knives.
Am. (2d quality), $ gro, 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....dis 20&10 %
Smith's. $ doz, Single, $2.00; Double, $3....dis 40@45 %
Knapp & Cowles.....dis 50&10@60 %
Buffalo Adjustable.....$ doz $3.00, dis 25 %

Molasses Gates.—Stebbins' Pat..dis 70@70 & 7½ %
Stebbins' Genuine.....dis 60&10&10 %
Stebbins' Tinned Ends.....dis 40&10 %
Chase's Hard Metal.....dis 50&10 %
Bush's.....dis 20 %
Lincoln's Pattern.....dis 70 @ 70&10 %
Weed's.....dis 20&10 %
Boss Nos.. 1 2 3 4
$7.00 8.00 9.00 10.00. $ dos, dis 60&10&10 %

Money Drawers.—$ doz., $18 @ $20.

Muzzles.—Safety, $ dos. $3.....dis 25 %

Nails.....See Trade Report
Wire Nails & Brads, list July 14, '87..dis 70&10 %
Wire Nails, Standard Penny.....$ keg, $2 60 @ $2.70

Nail Puller.—Curtiss Hammer....$ dos $9.00 net
Giant, No. 1.....$ dos $30.00, dis 10 %
Pelican.....$ dos $9.00, dis 25 %
Boss.....$ dos $30, dis 30 %

Nail Sets.—Square.....$ gro., $4.00 @ $4.25
Round.....$ gro., $3.25
Cannon's Diamond Point.....$ gro. $12 dis 20 %

Nut Crackers.
Table (Humason & Beckley Mfg. Co.).....dis 40 %
Blake's pattern.....$ doz $2.00. dis 10 %
Turner & Seymour Mfg. Co.....dis 50 %

Nuts
Nuts, all kinds, 5½¢ off list Jan. 1, 1888.
In lots less than 100 ℔, $ ℔, add ½¢, 1 ℔ boxes add 1¢ to list.

Oekum.
Government.....$ ℔ 8¢
U. S. Navy.....$ ℔ 7¢
Navy.....$ ℔ 6¢ @ 6¼¢

Oilers.—Zinc and Tin.....dis 65 & 65&10 %
Brass and Copper.....dis 50&10@50&10&5 %
Malleable, Hammers' Improved, No 1, $3.60; No. 2, $4.00; No. 3, $4.40 $ doz.....dis 10 @ 10&10 %
Malleable, Hammers, Old Pattern, same list....dis 40 %
Prior's Patent or "Paragon" Zinc.....dis 60&10&10 %
Prior's Patent or "Paragon" Brass.....dis 50 %
Olmstead's Tin and Zinc.....dis 60 %
Olmstead's Brass and Copper.....dis 50 %
Broughton's Zinc.....dis 60 %
Broughton's Brass.....dis 50 %

Packing, Steam.

Rubber—
Standard.....dis 60&10 @ 60&10&10 %
Extra.....dis 50&10 @ 60 %
N. Y. B. & P. Co., Standard.....dis 50&10&5 %
N. Y. B. & P. Co., Empire.....dis 70 %
N. Y. B. & P. Co., Salamander.....$ ℔ 65¢, dis 30 %
Jenkins' Standard.....$ ℔ 80¢, dis 35 %

Miscellaneous—
American Packing.....10¢ @ 11¢ $ ℔
Russia Packing.....14¢ $ ℔
Italian Packing.....13 @ 14¢ $ ℔
Cotton Packing.....15 @ 17¢ $ ℔
Jute.....7 @ 8¢ $ ℔

Padlocks.—See Locks.

Pails.
Galvanized Iron—

Quarts.	10	12	14
Hill's Light Weight, $ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, $ doz.	3.00	3.25	3.75
Whiting's.	2.75	3.00	3.25
Sidney Shepard & Co	2.67	....	3.23
Iron Clad.	2.75	3.00	3.25
Fire Buckets	2.75	3.25	3.50

Buckets, see Well Buckets

Indurated Fibre Ware—
Star Pails, 12 qt.....$ doz $4.50
Fire Stable and Milk, 14 qt.....$ doz $5.50

Pencils Faber's Carpenters'.....high list, dis 50 %
Faber's Round Gilt.....$ gro $5.25 net
Dixon's Lead.....$ gro $4.50 net
Dixon's Lumber.....$ gro $6.75 net
Dixon's Carpenters'.....dis 40&10 %

Picks.
Railroad, 5 to 6, $12.00; 6 to 7, $13, dis 60&10@60&10&5 %
Adze Eye, 5 to 6, $12.00; 6 to 7, $13, dis 60&10@60&10&5 %

Picture Nails.
Brass Head, Sargent's list.....dis 50&10&10 %
Brass Head, Combination list.....dis 50&10 %
Porcelain Head, Sargent's list.....dis 50&10&10 %
Porcelain Head, Combination list.....dis 40&10 %
Miles' Patent.....dis 40 %

Pinking Irons......$ dos 65¢ net

Pipe, Wrought Iron.—List March 23, 1887.
1¼ and under, Plain.....dis 55 %
1¼ and under Galvanized.....dis 47½ %
1¼ and over Plain.....dis 60 %
1¼ and over, Galvanized.....dis 55 %
Boiler Tubes, Iron.....dis 65 %

Planes and Plane Irons.
Wood Planes—
Molding.....dis 50&10 @ 50&10&5 %
Bench, First Quality.....dis 50&10&5 @ 60&5 %
Bench, Second Quality.....dis 60&10 @ 60&10&5 %
Bailey's (Stanley R. & L. Co.).....dis 30&10 %
Iron Planes—
Bailey's (Stanley R. & L. Co.)...dis 30&10@30&10&5 %
Miscellaneous Planes Stanley R. & L. Co..dis 20&10 %
Victor Planes Stanley R. & L. Co.)....dis 20& 10 %
Steer's Iron Planes.....dis 35 @ 35&5 %
Meriden Mal. Iron Co.'s.....dis 30&10@30&10&10 %
Davis's Iron Planes.....dis 30&10@30&10&10 %
Birmingham Plane Co.....dis 50@50&5 %
Gage Tool Co.'s Self Setting.....dis 2 %
Chapin's Iron Planes.....dis 40 @ 40 5 %
Sargent's.....dis 30&10 @ 30& 0&10 %
Plane Irons—
Plane Irons.....dis 20&10 %
Plane Irons Butcher's.....$5.00 @ $5.25 to 2
Plane Irons Buck Bros.....dis 30 %
Plane Irons, Auburn Tool Co., "Thistle"....dis 40 %
Plane Irons Middlesex Mfg. Co., "Baldwin Iron, Single and Cut.....dis 20 @ 25 %
Double.....dis 33½ @ 40 %
L. & J. White.....dis 25 %

Pliers and Nippers.
Button's Patent.....dis 30&10 @ 40 %
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 $ doz dis 20&10@33½ %
Humason & Beckley Mfg. Co.....dis 50@50&5 %
Gas Pliers.....dis 60 %
Gas Pliers, Custer's Nickel Plated.....dis 60&5 %
Eureka Pliers and Nippers.....dis 40 %
Russell's Parallel.....dis 25 %
P. S. & W. Cast Steel.....dis 50 %
P. S. & W. Tinners' Cutting Nippers....add 6 % dis 10 %
Carew's Pat. Wire Cutters.....dis 20 %
Morrill's Parallel, per doz., $12.....dis 30&5 %
Cronk's 8 in., $15; 10 in., $21.....dis 40 @ 40&5 %

Plumbs and Levels.
Regular List.....dis 70&10@70&10&10 %
Disston's.....dis 45&10 %
Pocket Levels.....dis 70&10@70&10&10 %
Davis Iron Levels.....dis 30 %
Davis' Inclinometers.....dis 10&10 %

Poppers, Corn.
Round or Square, 1 qt.....$ gro $12 @ $15
Round or Square, 2 qt.....$ gro $25 @ $26

Post Hole and Tree Augers and Diggers.
Samson Post Hole Digger.....$ doz $36.00, dis 25&10 %
Fletcher Post Hole Augers.....$ doz $36.00 dis 20 %
Eureka Diggers.....$ doz $16 @ $17
Leed's.....$ doz $8.00 @ $9.00
Vaughan's Post Hole, Auger, per doz....$13 00 @ $14.00
Conler's Little Giant.....$ doz $18.00
Kohler's Hercules.....$ doz $15.00
Kohler's New Champion.....$ doz $9.00
Schneidler.....$ doz $18
Ryan's Post Hole Diggers.....$ doz $24
Cronk's Post Bars.....doz $60, dis 50&5 @ 50&10 %
Gibb's Post Hole Digger, $ doz $30....dis 40 @ 40&10 %

Potato Parers.
White Mountain.....$ doz $5.00 @ 5.50
Antrim Combination.....$ doz $8.00
Hoosier.....$ doz $13.50

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw, $ doz $15.00.....dis 20&10 %
Disston's Pruning Hook.....$ doz $12.00, dis 20&10 %
E. S. Lee & Co.'s Prunin Tools.....dis 40 %
Pruning Shears, Henry Pat..$ doz $3 75 @ $4.00 net
Henry's Pruning Shears.....$ doz $4.25 @ $4.50 net
Wheeler, M. & Co.'s Combination...$ doz $12, dis 20 %
Dunlap's Saw and Chise.....$ doz $8.50, dis 30 %
J. Mallinson & Co.....No. 1, $5.25; No. 2, $7.22

Pulleys.—Hot House, Awning, &c.....dis 60&10 %
Japanned Screw.....dis 60&10 %
Brass Screw.....dis 60&10 %
Japanned Side.....dis 60&10 %
Japanned Clothes Line.....dis 60&10 %
Empire Sash Pulley.....dis 55 & 60 %
Moore's Sash, Anti Friction.....dis 50 %

Hay Fork, Solid Eye, $4.00; Swivel, $4.50 { dis 50&10 / @ 50&10&5 %
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70....dis 50 %
Hay Fork, "P" Common and Pat. Bushed.....dis 20 %
Hay Fork, Tarbox Pat. Iron.....dis 20 %
Hay Fork, Reed's Self-Lubricating.....dis 60 %
Shade Rack.....dis 45 %
Tackle Blocks.....See Blocks

Pumps.—Cistern, Best Makers.....dis 50 @ 10&60 %
Pitcher Spout, Best Makers...dis 60&10 @ 60&10&10 %
Pitcher Spout, Cheaper Goods..dis 70&5 @ 70&10&5 %

Punches.
Saddlers' or Drive, good quality.....$ doz 60¢ @ 65¢
Bemis & Call Co.'s Cast Steel Drive.....dis 50&5 %
Bemis & Call Co.'s Springfield Socket.....dis 50&5 %
Spring, good quality.....$ doz $2.50 @ $2.60
Spring, Leach's Patent.....dis 15 %
Bemis & Call Co.'s Spring and Check.....dis 40 %
Solid Tinners'.....$ doz $1.44, dis 55 %
Tinners Hollow Punches.....dis 20&2 %
Rice Hand Punches.....dis 15 %

Rail.
Sliding Door, Wrt. Brass $ ℔ 35¢.....dis 15 %
Sliding Door, Bronzed Wrt. Iron.....$ foot 7¢
Sliding Door Iron, Painted....$ foot 4¢, dis 20&10&5 %
Barn Door, Light....Inch. ¾ ¾
Per 100 feet.....$2.50 3.00 4.10—dis 10 %
S D for N E. Hangers—

	Small.	Med.	Large
Per 100 feet	$2.15	2.70	3.25 net

Terry's Wrought Iron, $ foot.....4½¢ @ 5¢
Victor Track Rail, 7¢ $ foot.....dis 50&2 %
Carrier Steel Rail, per foot.....4½¢

Rakes.
Cast Steel.....dis 65&5 @ 70 %
Malleable.....dis 70 @ 70&5 %
Gibbs Lawn Rake.....$12, dis 40 %
Canton Lawn Rake.....$9, dis 40 %
Ft. Madison Prize Bow Brace and Peerless..dis 65&5 %
Fort Madison Steel Tooth Lawn Rake, $6.....dis 25 %

Razors.—J. R. Torrey Razor Co.....dis 20%
Wostenholme and Butcher.....$10 to $, dis 10 %

Razor Strops.
Genuine Emerson.....dis 60 @ 60&5 %
Imitation Emerson.....$ doz $2.00, dis 20&10&5 %
Torrey's.....dis 20 %
Badger's Belt and Combination.....$ doz $2
Lamont Combination.....$ doz $4

Rivets and Burrs.
Copper.....dis 50 @ 50&10 %
Iron, list November 17, 1887.....dis 50 @ 50&7½ %

Rivet Sets......dis 50&2 @ 50&10 %

Rods.—Stair, Brass.....dis 20&2 %
Stair Black Walnut.....$ dos 40¢

Rollers.
Barn Door, Sargent's list.....dis 60&10&10 %
Acme (Anti-Friction).....dis 55 %
Union Barn Door Roller.....dis 70 %

Rope.—Manufacturers' prices for large lots.
Manila.....⅝ inch and larger $ ℔ 11½¢ net
Manilla.....⅝ inch $ ℔ 12¢ net
Manilla.....½ and 5-16 inch $ ℔ 12½¢ net
Manila Tarred Rope.....$ ℔ 11¢ net
Manila, Hay Rope.....$ ℔ 11½¢ net
Sisal.....⅝ inch and larger $ ℔ 9¾¢ net
Sisal.....½ inch $ ℔ 10¼¢ net
Sisal.....½ and 5-16 inch $ ℔ 10¾¢ net
Sisal, Hay Rope.....$ ℔ 9¾¢ net
Sisal, Tarred Rope.....$ ℔ 9½¢ net
Sisal, Medium Lath Yarn.....$ ℔ 8¾¢ net
Cotton Rope.....$ ℔ 15 @ 18¢ net
Jute Rope.....$ ℔ 7¢
Dis 1½ % for cash in 10 days.

Rules.
Boxwood.....dis 80&10 @ 80&10&10 %
Ivory.....dis 50 @ 50&10 %
Starrett's Rules and Straight Edges, Steel, dis 25&10 %

Sad Irons.
From 4 to 10, at factory.....$ 100 ℔ $2.40 @ $2.55
Self Heating.....$ dos. $9.00 net
Self Heating, Tailors'.....$ dos. $18.00 net
Gleason's Shield and Toilet.....dis 25 %
Mrs. Pott's Irons.....dis 40@40&5 %
Enterprise Star irons, new list, July 20, 1882....dis 40 %
Combined Fluter and Sad Iron...$ dos. $15.00, dis 15 %
Fox Reversible, Self Fluter.....$ dos., $24.00 net
Chinese Laundry (N. E. Butt Co.).....8¾¢, dis 15 %
New England.....8¢, dis 15 %
Mahony's Troy Pol. Irons.....dis 25 %
Sensible.....dis 20 @ 20&5 %

Sand and Emery Paper and Cloth.
List April 19, 1886.....dis 20@20&5 %
Sibley's Emery and Crocus Cloth.....dis 30 %

Sash Cord.
Common.....$ ℔, 10¢ @ 11¢
Patent, good quality.....$ ℔, 13¢ @ 13½¢
White Cotton Braided, fair quality.....$ ℔ 28¢ @ 29¢
Common Russia Sash.....$ ℔ 13½¢
Patent " " .....$ ℔ 15¢
Cable Laid Italian " .....$ ℔ 22¢ @ 23¢
India Cable Laid " .....$ ℔ 13¢
Silver Lake, A Quality, White.....50¢, dis 10&10&5 %
Silver Lake, A Quality, Drab.....55¢, dis 10&10&5 %
Silver Lake, B Quality, White.....50¢, dis 20&10&5 %
Silver Lake, B Quality Drab.....50¢, dis 20&10&5 %
Silver Lake, C Quality White (only).....27¢ @ 28¢
Sylvan Spring, Extra Braided, White.....34¢
Sylvan Spring, Extra Braided, Drab.....30¢
Semper Idem Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson, Braided, White Cotton.....50¢ dis 30 @ 30&5 %
Samson, Braided, Drab Cotton.....55¢ dis 30 @ 30&5 %
Samson, Braided Italian Hemp.....55¢ dis 30 @ 30&5 %
Samson Braided Linen.....80¢ dis 30 @ 30&5

Sash Locks.
Clark's No. 1, $10.00; No. 2, $8.00 $ gross.....dis 33½ %
Ferguson's.....dis 33½ %
Morris and Triumph, list Aug. 16, 1886.....dis 60&2 %
Victor.....60&10&2 %
Walker's.....dis 10 %
Attwell Mfg. Co.....dis 25 @ 33½ %
Reading.....dis 66⅔&10 @ 66⅔&10&10 %
Hammond's Window Springs.....dis 40 %
Common Sense, Jap'd, Cop'd and Br'sed..$ gross $4.00
Common Sense, Nickel Plated.....$ gross $10.00
Universal.....dis 30 %
Kempshall's Gravity.....dis 60 %
Kempshall's Model.....dis 60@60&10 %
Corbin's Daisy, list February 15, 1886.....dis 70 %
Payson's Perfect.....dis 60 @ 60&10 %
Huguuin's New and Improved Adjustable Sash Balances, list Jan. 5, 1887.....dis 25&2&2 %
Huguuin's New Sash Locks, list Jan. 5, '87, dis 25&5&2 %
Stoddard "Practical".....dis 10 %
Ives Patent.....dis 60 %
Lieseche's Nos. 100 & 110 $ gro. $8; 105, $10, dis 20&10 %
Davis, Bronze, Barnes Mfg. Co.....dis 50 %
Champion Safety, List March 1, 1888....dis 55@55&5 %
Security.....dis 70 %

Sash Weights.
Solid Eyes.....$ ton. $22

Sausage Stuffers or Fillers.
Miles' "Challenge".....$ dos. $20, dis 50@50&5 %
Perry.....$ dos. No. 1, $15; No. 0, $21, dis 50@50&5 %
Draw Cut No. 4.....each, $30.00, dis 20 %
Enterprise Mfg. Co.....dis 20&10 @ 30 %
Oliver's.....dis 40&10 %

Saws.
Disston's Circular....dis 45@45&5 %
Disston's Cross Cuts, d's 45@45&5 %
Disston's Hand.....dis 25@25&5 %
} Extras sometimes given by jobbers.
Atkins' Circular.....dis 50 %
Atkins' Silver Steel Diamond X Cuts.....$ foot 70¢
Atkins' Special Steel Dexter X Cuts.....$ foot 50¢
Atkins' Special Steel Diamond X Cuts.....$ foot 30¢
Atkins' Champion and Electric Tooth X Cuts.....$ foot 27 @ 28¢
Atkins' Hollow Back X Cuts.....$ foot 18¢
Atkins' Shingle, Mulay, Drag, &c.....dis 45 %
W. M. & C., Hand.....dis 30&5 @ 30&10 %
W. M. & C. Champion X Cuts, Regular $ foot .24@26¢
W. M. & C. X Cuts, Thin Back.....$ foot 27¢@29¢
Peace Circular and Mill.....dis 45&10 %
Peace Hand Panel and Rip....dis 20&10 @ 20&10&10 %
Peace Cross Cuts, Standard.....$ foot 25¢
Peace Cross Cuts, Thin Back.....$ foot 27¢@28¢
Richardson's Circular and Mill.....dis 45 @ 45&10 %
Richardson's X-Cuts, No. 1, 30¢; No. 2, 27¢; No. 3, 24¢
Hack Saws—
Griffin's Hack Saws, complete.....dis 40&10 @ 50 %
Griffin's Hack Saw, Blades only....dis 40&10 @ 50 %
Star Hack Saws and Blades.....dis 25 %
Diamond Hack Saws and Blades.....dis 25 %
Eureka and Crescent.....dis 25 %

Saw Frames.
White Vermont.....$ gro $9 @ $10
Red, Polished, and Varnished....$ dos $1.50, dis 25 %

Saw Sets.
Stillman's Genuine....$ dos $5.00 and $7.75, dis 40&5 %
Stillman's Imita..$ dos $3.25 and $5.25, dis 40&5@40&10%
Common Lever.....$ dos $2.00, dis 40&5 %
Morrill's No. 1, $15.00; Nos. 3 & 4, $24...dis 40@10@50%
Leach's.....No. 0, $8.00; No. 1, $15.00, dis 15 @ 20 %
Nash's.....dis 20&10 @ 20&10&10 %
Hammer, Hotchkiss.....$5.50, dis 10 %
Hammer, Bemis & Call Co.'s new Patent....dis 30&5 %
Bemis & Call Co.'s Lever and Spring Hammer..dis 30&5 %
Bemis & Call Co.'s Plate.....dis 10 %
Bemis & Call Co.'s Cross Cut.....dis 12½ %
Aiken's Genuine.....$13.00, dis 50&10 %
Aiken's Imitation.....$7.00, dis 55&5 %
Hart's Patent Lever.....dis 20&10@20&10&10 %
Disston's Star, 20, No. 15, $5.50, dis 20&10@20&10&10 %
Atkins' Lever.....per doz No. 1, $6.00; No. 2, $9.60
Atkins' Criterion.....per doz $7.50
Croissant (Keller), No. 1, $15.00; No. 2, $24.00...dis 40&10 %

Saw Tools.
Atkins Perfection.....$15.00; Excelsior $6.00 $ doz

Scales.
Hatch, Counter, No. 171, good quality.....$ dos $31
Hatch, Tea, No. 161.....$ dos $5.75 @ $7.00
Union Platform, Plain.....$2.10 @ $2.20
Union Platform, Striped.....$2.20 @ $2.30
Chatillon's Grocers' Trip Scales.....dis 50 %
Chatillon's Eureka.....dis 35 %
Chatillon's Favorite.....dis 40 %
Family, Turnbull's.....dis 30@30&10

Scale Beams.
Scale Beams List of Jan. 12, 82..dis 50&10@50&10&5 %
Chatillon's No. 1.....dis 40 %
Chatillon's No. 2.....dis 50 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.)..$6.50, dis 30&10 %
Box, 1 Handle.....$ doz $4.00, dis 10 %
Box, 2 Handle.....$ doz $6.00, dis 10 %
Defiance Box and Ship.....dis 20&10 %
Foot.....dis 50&10@60 %
Ship, Common.....$ doz $3.00 net
Ship, Providence Tool Co.....dis 10 %

Screen Window and Door Frames.
Porter's Pat. Window and Door Frame...dis 33½&10 %
Screen Corner Irons Warner's....dis 33½ @ 33½&10 %
Stearns' Frames and Corners.....dis 25 @ 25&10 %

Screw Drivers.
Douglas Mfg Co.....dis 20&10&10 %
Disston's.....dis 45&10 %
Disston's Patent Excelsior.....dis 45&10 %
Buck Bros.....dis 30 %
Stanley R. & L. Co.'s Varnished Handles....dis 65&10 %
Stanley R. & L. Co.'s Black Handles.....dis 60&10 %
Sargent & Co.'s No. 1 Forged Blade....dis 60&10&10 %
Sargent & Co.'s Nos 20, 50 and 60.....dis 66⅔&10&10 %
Knapp & Cowles' No. 1.....dis 60&20 @ 70 %
Knapp & Cowles' No. 1 Extra.....dis 60 @ 60&10 %
Knapp & Cowles No. 00 & 4.....dis 50&5 @ 50&10&5 %
Stearns'.....dis 25&10&5 %
Gay & Parsons.....dis 35 %
Champion.....dis 25&10 %
Clark's Patent.....dis 30 @ 33½&5
Crawford's Adjustable.....dis 30 %
Ellrich's Socket and Ratchet.....dis 25 @ 25&10 %
Allard's Spiral new list.....dis 25 %
Kelb's Common Sense.....$ doz 16, dis 25&10

Syracuse Screw-Driver Bits.....dis 30 & 30&5 %
Screw Driver Bits.....₩ doz. 50¢ @ 75¢
Screw Driver Bits, Parr's.....₩ gro 6.25
Fray s Hol. Hdle. Sets, No. 3, $12.....dis. 25 @ 25 & 10 %
P. D & Co 's, all Steel.....dis 50 %

Screws

Wood Screws—List, Brass, Jan 27; Iron, July 1, 1887

Flat Head Iron.....dis 70 %
Round Head Iron.....dis 65 %
Flat Head Brass.....dis 65 %
Round Head Brass.....dis 60 %
Flat Head Bronze.....dis 65 %
Round Head Bronze.....dis 60 %

} Ex. 10 % often given by jobbers.

Machine—
Flat Head, Iron.....dis 55 %
Round Head, Iron.....dis 50 %

Bench and Hand—
Bench, Iron.....dis 55&10 @ 55&10&10 %
Bench, Wood, Beech.....₩ dos $2.25
Bench, Wood, Hickory.....dis 20&10 %
Hand, Wood.....dis 25&10 @ 25&10&5 %
Lag, Blunt Point.....dis 75 @ 75&10 %
Coach and Lag, Gimlet Point.....dis 75 %
Bed.....dis 25&5 %
Hand Rail, Sargent's.....dis 65%&10 %
Hand Rail, Humason, Beckley & Co.'s..dis 70&10@75 %
Hand Rail, Am. Screw Co.....dis 75 %
Jack Screws, Millers Falls list.....dis 50 @ 50&5 %
Jack Screws, P. S. & W.....dis 35 %
Jack Screws, Sargent.....dis 60&10 @ 60&10&5 %
Jack Screws, Stearns.....dis 40 @ 40&10 %

Scroll Saws.

Lester, complete, $10.00.....dis 25 %
Rogers, complete, $4.00.....dis 25 %

Scythe Snaths.....dis 50&2 %

Shears.

American (Cast) Iron.....dis 75&10 @ 75&10&5 %
Pruning.....See Pruning Hooks and Shears
Barnard's Lamp Trimmers.....₩ dos $3.75
Tinners'.....dis 20&2 %
Seymour's, List, Dec., 1881 dis 60&10&10@60&10&10&5 %
Heinsch's, List, Dec., 1881 dis 60&10&10@60&10&10&5 %
Heinsch's Tailor's Shears.....dis 33⅓ %
First quality C. S. Trimmers.....dis 80@80&10 %
Second quality C. S. Trimmers.dis 80&10@80&10&10 %
Acme Cast Shears.....dis 10&10 %
Diamond Cast Shears.....dis 10 %
Clipper.....dis 10&10 %
Victor Cast Shears.....dis 75&10@75&10&5 %
Howe Bros. & Hulbert, Solid Forged Steel...dis 40 %
Cleveland Machine Co. Solid Steel Forged.....dis 70 %
Clauss Shear Co., Japanned.....dis 70 %
Clauss Shear Co., Nickeled, same list.....dis 60 %

Sheaves

Sliding Door—
M. W. & Co., list July, 1888.....dis 50&10 @ 60&5 %
R. & E., list Dec. 18, 1888.....dis 55&2 %
Corbin's list.....dis 60&10&2 %
Patent Roller.....dis 60&10&2 %
Patent Roller, Hatfield's.....dis 75 %
Russell's Anti-Friction, list Dec. 18, 1885..dis 60&2 %
Moore's Anti-Friction.....dis 60 %

Sliding Shutter—
R. & E. list Dec. 18, 1885.....dis 60&10&2 %
Sargent's list.....dis 60&10 %
Reading list.....dis 60&10&10 %

Ship Tools.

L. & I. J. White.....dis 20&5 %
Albertson Mfg. Co.....dis 25 %

Shoes, Horse, Mule, &c.

Horse—
Burden's, Perkins', Phœnix, at factory.....$4.00
Mule—Add $1 ₩ keg to above prices.

Ox, Wrought—
Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot —*Eastern prices, 2¢ off. cash, 5 days.*)
Drop, ₩ bag, 25 ℔.....$1.45
Drop, ₩ cag o ℔.....34
Buck and Chilled, ₩ 35-℔ bag.....$1.70
Buck and Chilled, ₩ 5 ℔ bag.....39

Shovels and Spades.

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....dis 20 %
NOTE.—Jobbers frequently give 5 @ 7½ % extra on above.
Griffith's Black Iron.....dis 50&10 %
Griffith's C. S.....dis 60 @ 60&10 %
Griffith's Solid Cast Steel R. R. Goods.....dis 20 %
Old Colony (Sanford Fork & Tool Co).....dis 20 %
St. Louis Shovel Co.....dis 20 @ 20&7½ %
Hussey, Binns & Co.....dis 15 @ 25 %
Hubbard & Co.....dis 20@20&7½ %
Lehigh Mfg. Co.....dis 50&10 %
Payne Pettebone & Son, list January, 1886.....dis 30 %
Remington's (Lowman's Patent).....dis 30&10 @ 40 %
Rowland's, Black Iron.....dis 50&10 %
Rowland's Steel.....dis 60&5 @ 60&10 %

Shovels and Tongs.

Iron Head.....dis 60&10@60&10&5 %
Brass Head.....dis 60&10&10 %

Skeins, Thimble.

Western list.....dis 75&5 @ 75&10 %
Columbus Wrt. Steel, list Nov. 1, 1887.....dis 20 %
Coldbrookdal Iron Co.....dis 50&10 %
Utica P. S. T. Skeins.....dl 60 %
Utica Turned and Fitted.....dis 35 %

Sieves.

Buffalo Metallic, S. S. & Co., new list..dis 50&25&10 %
Barter Flour Sifters.....₩ doz $2.00
Smith's Adjustable Sifters.....₩ doz $2.25
Smith's Adjustable Milk Strainer.....₩ doz $2.00
Smith's Adjustable F. & C. Strainer.....₩ doz $1.75

Sieves, Wooden Rim—	Iron.	Plated.
Mesh 18, Nested. ₩ dos.	70¢	90¢
Mesh 20, Nested, ₩ dos.	85¢	$1.00
Mesh 24, Nested. ₩ dos.	$1.00	1.10

Slates.—School, by case.....dis 50&10 %

Snaps, Harness, &c.

Anchor (T. & S. Mfg Co).....dis 65 %
Fitch's, Bristol.....dis 50&10 %
Hotchkiss.....dis 10 %
Andrews.....dis 50 %
Sargent's Patent Guarded.....dis 70&10&10 %
German, new list.....dis 40&10 %
Covert.....dis 50&2 %
Covert, New Patent.....dis 50&5&2 %
Covert New R. E.....dis 60&2 %
Covered Spring.....dis 60&10&10 %

Soldering Irons.

Covert's Adjustable list Jan. 1, 1886.....dis 35&2 %

Spoke Shaves.—Iron.....dis 45 %

Wood.....dis 30 %
Bailey's (Stanley R. & L. Co.).....dis 40&10 %
Stearns'.....dis 20&10 @ 30 %

Spoke Trimmers.

Bonney's.....₩ dos $10.00, dis 50 %
Stearns'.....dis 20&10 %
Ives'.....No. 1, $15.00; No. 2, $12.00 ₩ dos, dis 55&10 %
Douglass'.....₩ dos $9.00, dis 20 %

Spoons and Forks.

Tinned Iron—
Basting, Central Stamping Co.'s list. dis 70@70&10 %
Solid Table and Tea, Central Stamping Company's list.....dis 70@70&10 %
Buffalo S. S. & Co.....dis 33⅓&2 %

Silver-Plated—4 mos. or 5 % cash 30 days.
Meriden Brit. Co., Rogers.....dis 50 %
C. Rogers & Bros.....dis 50 %
Rogers & Bro.....50 %
Reed & Barton.....dis 50 %
Wm. Rogers Mfg. Co.....dis 50&10 @ 50&10&5 %
Simpson, Hall, Miller & Co.....dis 50&10 %
Holmes & Edwards Silver Co..dis 50&10 @ 50&10&5 %
H. & E. Silver Co. Mexican Silver.....dis 50&5 %
H. & E. Silver Co., Durham Silver.....dis 50&5 %
German Silver.....dis 50 @ 50&5 %
German Silver, Hall & Elton.....dis 50&5 %, cash
Nickel Silver.....dis 50&5@50&10&5 %, cash
Britannia.....dis 60 %
Boardman's Flat Ware.....dis 50&10 %
Boardman's Nickel Silver.....dis 50 %
Boardman's Brit'nia Spoons, case lots.....dis 60 %

} 4 mos.

Springs.

Elliptic, Concord, Platform and Half Scroll.....dis 60 @ 60&5 %
Cliff's Bolster Springs.....dis 25 %

Squares.

Steel and Iron.....
Nickel Plated.....
} dis 75 @ 80 %

Try Square and T Bevels.....dis 60&10&10 @ 70 %
Disston's Try Square and T Bevels.....dis 45&10 %
Winterbottom's Try and Miter.....dis 30&10 %
Starrett's Micrometer Caliper Squares.....dis 25 %

Staples.

Fence Staples, Galvanized } Same price as Barb Wire.
Fence Staples, Plain..... } See Trade Report.

Steelyards.

Stocks and Dies.....dis 40&10&10&5 %

Blacksmith's, Waterford Goods.....dis 30&5 @ 30&10 %
Lightning Screw Plate.....dis 25 @ 30 %
Reece's New Screw Plates.....dis 33⅓ @ 33⅓&5 %

Stone.

Hindostan No. 1, 3¢; Axe, 5½¢; Slips No. 1, 5¢.
Sand Stone.....₩ ℔, 2¢
Washita Stone, Extra.....₩ ℔, 2 1 @ 22¢
Washita Stone, No. 1.....₩ ℔, 15 @ 16¢
Washita Stone, No. 2.....₩ ℔, 11 @ 12¢
Washita Slips, No. 1, Extra.....₩ ℔, 40 @ 42¢
Washita Slips, No. 1.....₩ ℔, 30 @ 32¢
Arkansas Stone No. 1, 4 to 6 in.....₩ ℔, $1.35
Arkansas Stone, No. 1, 6 to 9 in.....₩ ℔, $1.75
Turkey Oil Stone.....4 to 8 in., ₩ ℔, 40¢
Turkey Slips.....₩ ℔, $1.00 @ $1.50
Lake Superior, Chase.....₩ ℔, 16¢
Lake Superior Slips, Chase.....₩ ℔, 31@32¢
Seneca Stone, Red Paper Brand, ₩ ℔.....18 @ 20¢
Seneca Stone, High Rounds, ₩ ℔.....30 @ 35¢
Seneca Stone, Small Wheels ₩ gro.....$24.00

Stove Polish.—Joseph Dixon's..₩ gro $6. dis 10 %

Gem.....₩ gro $4.50, dis 10 %
Gold Medal.....₩ gro $6.00, dis 25 %
"Mirror".....₩ gro $6.00, dis — %
Lustro.....₩ gro $4.75 net
Ruby.....₩ gro $3.75 net
Rising Sun, 5 gro. lots.....₩ gro $5.50
Dixon's Plumbago.....₩ ℔ 8¢ net
Boynton's Noon Day ₩ gro.....$6.00
Parlor Pride Stove Enamel.....₩ gross, $13
Yates' Liquid, 2 ₩ gal., $0.90, .80, .70, .60 5 10 gal. cans
Yates Standard Paste Polish ,10-lb cans, per lb., 15 ¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K Enamel.....₩ gro $10.00

Tacks, Brads, &c.
List, Jan 2, 1888.

American Iron Carpet Tacks.....dis 72½&10&2 %
Steel Carpet Tacks.....dis 72½&10&2 %
Swedes Iron Carpet Tacks.....dis 72½&10&2 %
American Iron Cut Tacks.....dis 70&10&2 %
Swedes Iron Tacks.....dis 67½&10&2 %
Swedes Iron Upholsterers' Tacks...dis 67½&10&2 %
Tinned Swedes iron Tacks..dis 67½&10& %
Tin'd Sw'des Iron Upholsters Tacks.dis 67½&10&2 %
Gimp and Lace Tacks.....dis 67½&10&2 %
Tinned Gimp and Lace Tacks.....dis 67½&10&2 %
Swedes iron Trimmers' Tacks....dis 67½&10&2 %
Swedes Iron Miners' Tacks.....dis 67½&10&2 %
Swedes Iron Bill Posters' or Railroad Tacks.....dis 67½&10&2 %
Swedes Steel Tacks, all kinds (Swedes Iron price list).....dis 72½&10&2 %
Copper Tacks.....dis 3½&10&10&2 %
Copper Finishing Trunk and Clout Nails.....d's 33⅓&10&2 %
Finishing Nails.....dis 60&10&2 %
Trunk and Clout Nails.....dis 60&10&2 %
Tinned Trunk and Clout Nails.....dis 60&10&2 %
Basket Nails.....dis 60&10&2 %
Common and Patent Brads.....dis 60&10&2 %
Hungarian Nails.....dis 60&10&2 %
Chair Nails.....dis 60&10&2 %
Zinc Glaizers' Points.....dis 40&10&2 %
Cigar Box Nails.....dis 45&10&2 %
Picture-Frame Points.....dis 45&10&2 %
Looking-Glass Tacks.....dis 45&10&2 %
Leathered Carpet Tacks.....dis 45&10&2 %
Brush Tacks.....dis 45&10&2 %
Shoe Finders'.....List Jan. 2, 1888. dis 10 @ 10&5 %
Lining and Saddle Nails, List Jan. 1, 1886:
Silvered.....dis 30&10&10 %
Japanned.....dis 20&10&10 %
Double-pointed Tacks.....85 %
Wire Carpet Nails.....dis 50&10 %
Wire Brads and Nails.....See Nails, Wire
Steel Wire Brads, R. & E. Mfg. Co.'s list.....dis 50&10 %

Extra 10@10&5 % generally given.

Tap Borers.—Common and Ritz.....dis 20&10 %
Ives' Tap Borers.....dis 33⅓&5 %
Enterprise Mfg. Co.....dis 20&10 @ 30 %
Clark's.....dis 33⅓ @ 35 %

Tapes, Measuring.—American.....dis 25&10 %
Spring.....dis 40 %
Chesterman's.....Regular list dis 25 @ 30 %

Thermometers.—Tin Case.....dis 30 @ 30&10 %

Thimble Skeins.—See Skeins.

Ties, Bale.

Steel Wire, Standard list.....dis 50&10&5 %

Tinners' Shears, &c.

Shears and Snips (P. S. & W.).....dis 20 @ 25 %
Punches—See Punches.
Snips, J. Mallinson & Co.....dis 33⅓ %

Tinware.

Stamped, Japanned & Pieced, list Jan. 20, 1[illegible].....dis 70&10 @ 70&10&5 %

Tire Benders, Upsetters, &c.

Stoddard's Lightning Tire Upsetters.....dis 15 %
Detroit Perfected Tire Bender.....dis 15 %

Tobacco Cutters.

Enterprise Mfg. Co. (Champion).....dis 20&10 @ 30 %
Wood Bottom.....₩ dos $5.00 @ $5.25
All Iron.....₩ dos $4.25
Nashua Lock Co.'s.....₩ dos $18.00, dis 50 @ 55 %
Wilson's.....dis 50 %
Sargent's.....₩ dos $24, dis 55&10 %
Acme.....₩ dos $20.00, dis 40 %

Trammon Lifters
Wollensak's Patent Iron Bronzed.....dis 50 %
Reiher's bronzed Iron Rods list Jan. 1, 1887, dis 50&2 %
Reiher's Real Bronze or Nickel Plate, list Jan. 1, 1887.....dis 50&2 %
Excelsior.....dis 50&10&2 %
Shaw's.....dis 50&10
Payson's Universal.....dis 40 @ 40&10 %
Crown and Star.....dis 50 %

Traps.

Game—
Newhouse.....dis 35 @ 40&5 %
Uneldr. Pattern.....dis 70 @ 7[illegible]&5 %
Game, Blake's Patent.....dis 40&10&5 %

Mouse and Rat—
Mouse, Wood Choker.....₩ dos holes, 11@12
Mouse, Round Wire.....₩ dos $1.50, dis 10 %
Mouse, Cage, Wire.....₩ dos $2.50, dis 10 %
Mouse, Catch-'em-alive.....₩ dos $2.50, dis 15 %
Mouse, "Bonanza".....₩ gross $10 net
Mouse, Delusion.....₩ gross $18.00, dis 15 %
Rat, "Decoy".....₩ gross $10.00, dis 10 %
Ideal.....₩ gross $10
Cyclone.....₩ gross $5.25
Hotchkiss Metallic Mouse, 5-hole traps....₩ doz 90¢
In full cases.....₩ doz 75¢

Trowels

Lothrop's Brick and Plastering.....dis 25 %
Reed's Brick and Plastering.....dis 15 %
Disston's Brick and Plastering.....dis 25 @ 25&10 %
Peace's Plastering.....dis 25 %
Clement & Maynard's.....dis 20 %
Rose's Brick.....dis 15 @ 20 %
Brade's Brick.....dis 25 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis 70 %

Triers.—Butter and Cheese.....dis 25 %

Trucks, Warehouse, &c.

B. & L. Block Co.'s list, 1882.....dis 40 %

Tubes, Boiler.—See Pipe

Twine.

	BC.	B.
No. 9, Flax Twine, ¼ and ⅛ ℔ Balls	22¢	30¢
No. 12, " " ¼ and ⅛ "	21¢	29¢
No. 18, " " ¼ and ⅛ "	18¢	28¢
No. 24, " " ¼ and ⅛ "	18¢	28¢
No. 36, " " ¼ and ⅛ "	16¢	27¢
No. 204, Mattrass, ¼ and ⅛ "		48 @ 50¢
Chalk Line, Cotton ⅛ ℔ Balls		25¢
Mason Line, Linen, ⅛ "		55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine)		11½¢
3-Ply Hemp, 1 ℔ Balls		12 @ 13½¢
3-Ply Hemp, 1½ ℔ Balls		11 @ 11½¢
Cotton Wrapping, 5 Balls to ℔		15¢ @ 18¢
2, 3, 4 and 5 Ply Jute, ¼ ℔ Balls		10¢
Wool		6½¢ @ 6½¢
Paper		13¢ @ 14¢
Cotton Mops—6, 9, 12 and 15 ℔ to doz		18¢

Vises.
Solid Box.....dis 60 @ 60&5 %

Parallel—
Fisher & Norris Double Screw.....dis 15&10 %
Stephens'.....dis 25 @ 30 %
Parker's.....dis 20 @ 25 %
Wilson's.....dis 55 %
Howard's.....dis 40 %
Bonney's.....dis 40&10 %
Millers Falls.....dis 40 @ 40 .10 %
Trenton.....dis 40&5 40&10 %
Merrill's.....dis 15@20 %
Sargent's.....dis 60&10&10 %
Backus and Union.....dis 40 %
Double Screw Leg.....dis 15&10 %
Prentiss.....dis 20&5 @ 25 %
Simpson's Adjustable.....dis 40 %

Saw Filers—
Bonney's, Nos. 2 & 3.....₩ dos $15.00, dis 4 &10 %
Stearn's.....dis 33⅓&10 @ 33⅓&10&10 %
Stearn's Silent Saw Vises.....dis 33⅓ @ 35 %
Sargent's.....dis 66⅔&10 %
Hopkins'.....₩ dos $17.50 dis 10 %
Reading.....dis 40&10 %
Wentworth.....dis 20&10 %
Combination Hand Vise.....₩ gro, $42.00
Cowell Hand Vises.....dis 20 %
Bauer's Pipe Vises.....dis 10 %

Wagon Boxes
Per lb.....3½¢

Wagon Jacks.

Daisy.....₩ doz $4 00, dis 25 %

Washer Cutters.

Smith's Patent.....₩ dos $12.00, dis 40&10&10 %
Johnson's.....₩ dos $11.00, dis 33⅓ %
Penny's.....₩ dos Pol. $14; Jap'd, $16..dis 55 %
Appleton's.....₩ dos $16.00, dis 60&10 %
Bonney's.....dis 80&10 %

Washers.

Size	¼	5-16	⅜	½	⅝	¾	1
Washers	7	5¾	4¼	3¼	2¼	3½	3½

In lots less than 200 ℔, ₩ ℔, add ½¢, 5-℔ boxes 1¢ to list.

Wedges.—Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 4 ¢

Well Buckets, Galvanized.

Hill's.....₩ doz ..12 qt., $4.25; 14 qt., $5.25
Iron Clad.....₩ doz., 14 qt., $4.25 @ $4.50
Whiting's Flat Iron Band.....₩ dos $4.25 @ $4.50
Whiting's Wired Top.....₩ dos $4.00 @ $4.25

Well Wheels—8 in., $2.25; 10 in., $2.70; 12 in., $3.25.

Wire.

Iron—
Market, Br. & Ann., Nos. 0 to 18.....dis 70&10 &75 %
Market, Copp'red, Nos. 0 to 18.....dis 70&70&5 %
Market, Galvanized, Nos. 0 to 18.....dis 65&5 %
Market Tin'd Tinned list Nos. 0 to 18.....dis 67½ %
Stone Br. & Ann'd, Nos. 16 to 18, .dis 72½@72½&5 %
Stone, Bright & Ann'd, Nos. 19 to 26.....dis 75@75&5 %
Stone, Br. & Ann'd, Nos. 27 to 36.....dis 75&10&5 %
Stone, Tin'd, Tin'd list, Nos. 18 to 36..dis 70@70&10 %
Tinned Broom Wire, Nos. 18 to 24.cl' 70@70&10 %
Galvanized Fence.....dis 65 %
Annealed Fence, Nos. 8 & 9.....dis 75 %
Annealed Grape, Nos. 10 to 14.....dis 75 %
Brass, list Jan. 18, '84.....dis 15 @ 20 %
Cooper, list Jan. 18, 1884.....dis 20 @ 25 %
Barb Fence.....See Trade Report
Wire on Spools.....dis 65 %
Malin's Steel and Tinned Wire on Spools.....dis 40 %
Malin's Brass and Copper Wire on Spools.....dis 30 %
Cast Steel Wire.....dis 60 %
Stubs' Steel Wire.....$6.00 to 8, dis 30 %
Steel Music Wire, Nos. 12 to 30.....55¢ ₩ ℔
Picture Wire.....dis 60&10 %
Barb Wire Safety Guards.....₩ 1000 $9.00, dis 25 %
Wire Clothes Lines.....See Lines.

Wire Cloth, Netting, &c.

Painted Screen Cloth, No. 31, ₩ 100 sq ft.....$1.90
Painted Screen Cloth, No 33, ₩ 100 sq ft.....$2.00
Galvan zed Wire Netting.....dis 70&10 @ 75 %

Wire Goods.—See Bright Wire Goods.

Wire Rope.—List May 1, 1886.....dis 33⅓ %

Wrenches.—American Adjustable.....dis 45 %
Baxter's Adjustable "S".....dis 40¢ @ 50 %
Baxter's Diagonal.....dis 40&10 @ 50 %
Coes' Genuine.....dis 55&3 %
Coes' "Mechanics".....dis 55&10&3 %
Girard Standard.....dis 70&10 %
Lamson & Sessions' Engineers'.....dis 60&10 %
Lamson & Sessions' Standard.....dis 70&10 %
Coes Pattern, Wrought.....
Girard Agricultural.....
Lamson & Sessions' Agricultural.....
} dis 80 @ 80&5 %
Sterling Wrought.....
Bemis & Call's Patent Combination.....dis 35 %
Bemis & Call's Merrick's Pattern.....dis 35 %
Bemis & Call's Brigg's Patte.....dis 25 %
Bemis & Call's Cylinder or Gas Pipe.....dis 40&5 %
Bemis & Call's No. 8 Pipe.....dis 35&5 %
Aiken's Pocket Bright.....$6.00, dis 60&10 %
The Favorite Pocket Bright).....₩ dos $4.00 dis 40¢
Webster's Patent Combination.....dis 75 %
Boardman's.....dis 25 &10 %
Always Ready.....dis 25&10 %
Alligator.....dis 50 ¢
Donohue's Engineer.....dis 10& 0 %
Acme, Bright.....dis 60&3 %
Acme, Nickeled.....dis 10&3%
Walker's.....dis 55&3 %
Diamond.....dis 40 %
Diamond Patent Steel.....dis 40 %

Wringers, Clothes.
List Jan. 10, 1888 $2.50 off.

Wrought Goods.
Staples Hooks, &c., is Jan. 1, '87.dis 80&20@50&2½ %

CURRENT METAL PRICES.

SEPTEMBER 19, 1888.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:
¾ to 2 in. round and square.. } ₩ lb 1.90 @ 2.00¢
1 to 6 in. x ¾ to 1 in..... }
Refined Iron:
¾ to 2 in. round and square.. }
1 to 4 in. x ¾ to 1½ in..... } ₩ lb 2.10 @ 2.2¢
4½ to 6 in. x ¾ to 1 in ..... }
1 to 6 in. x ¼ and 5-16 ..... ₩ lb 2.30 @ 2.4¢
Rods—⅝ and 11-16 round and sq. ₩ lb 2.30 @ 2.3¢
Bands—1 to 6 x 3-16 to No. 12..... ₩ lb 2.30 @ 2.4¢
"Burden Best" Iron, base price.. ₩ lb 3.00 @ ....¢
Burden's "H. B. & S." Iron, base price... ₩ lb 2.80 @ ....¢
"Ulster" ₩ lb 3.10 @ ....¢
Norway Rods 4.00 @ 5.00¢

Merchant Steel from Store.

Per pound.

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots 2¾¢ @ 3¢
Best Cast Steel, base price in small lots 8¾¢ @ 9¢
Best Cast Steel Machinery, base price in small lots 5½¢ @ 6¢

For Classification and Extras adopted by the Merchant Steel Association of the United States, June 1, 1888, see *The Iron Age*, June 21, 1888.

Sheet Iron from Store.

	Common American.		R. G.	Cleaned.
10 to 16	₩ lb 2.75	@ 2.80¢	3.25	@ ....¢
17 to 20	₩ lb 2.85	@ 3 00¢	3.25	@ 3.50 ¢
21 to 24	₩ lb 3.00	@ 3.10¢	3.50	@ ....¢
25 and 26	₩ lb 3 20	@	3.50	@ ....¢
27	₩ lb 3.35	@ 3.37½¢	3.75	@ ....¢
28	₩ lb 3.50	@ ... ..¢	4.00	@ ....¢
	B. B.		2d qual.	
Galv'd, 14 to 20	₩ lb. 4.50	@	4.38	@ ....¢
Galv'd, 21 to 24	₩ lb. 4.87½	@	4.75	@ ....¢
Galv'd, 25 to 26	₩ lb. 5 25	@	5.12	@ ....¢
Galv'd, 27	₩ lb. 5.62½	@	5.48	@ ....¢
Galv'd, 28	₩ lb. 6.00	@	5.85	@ ....¢
Patent Planished	₩ lb A 10¢		B, 9¢	
Russia	₩ lb 9½¢ @ 10¢			
American Cold Rolled B. B.	₩ lb 5¢ @ 7¢			

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12½¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢

METALS.

Tin.

	Per lb
Banca, Pigs	25¢
Straits, Pigs	25¢
English, Pigs	24½¢
Straits in Bars	26¢

Tin Plates.

Charcoal Plates.—Bright. Per box.

Melyn Grade	IC 10 x 14	$5.75 @	$6 00
" "	IC, 12 x 18	6.00 @	6.25
" "	IC, 14 x 20	5.75 @	6.00
" "	IC, 20 x 28	12.25 @	12.50
" "	IX, 10 x 14	7.25 @	7.50
" "	IX, 12 x 12	7.50 @	7 75
" "	IX, 14 x 20	7 25 @	7.50
" "	IX, 20 x 28	15.25 @	15 50
" "	DC, 12½ x 17	5.50 @	5.75
" "	DX, 12½ x 17	7.00 @	7 25
Calland Grade	IC, 10 x 14		$6.00
" "	IC, 12 x 12		6 25
" "	IC, 14 x 20		6.00
" "	IX, 10 x 14		7.50
" "	IX, 12 x 12		7.75
" "	IX, 14 x 20		7.50
Allaway Grade	IC, 10 x 14	$5.25 @	....
" "	IC, 12 x 12	5.50 @	....
" "	IC, 14 x 20	5.25 @	....
" "	IC, 20 x 28	10.75 @	....
" "	IX, 10 x 14	6.25 @	....
" "	IX, 12 x 12	6 50 @	....
" "	IX, 14 x 20	6.25 @	....
" "	IX, 20 x 28		12.50
" "	DC, 12½ x 17	5.00 @	....
" "	DX, 12½ x 17	6.00 @	....

Coke Plates—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20		$5.00 @	....
	10 x 20	7.50 @	7.65
	20 x 28	10.25 @	....
	IX, 10 x 14, 14 x 20		5.75
BV Grade.—IC, 10 x 14, 14 x 20		4.70 @	....

Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20		$4.62½ @	....
	20 x 28	9 25 @	....
	IX, 14 x 20	5.62½ @	....
	20 x 28	11.37½ @	....
Abecarne Grade.—IC, 14 x 20		4.50 @	....
	20 x 28	9.00 @	....
	IX, 14 x 20	5.50 @	....
	20 x 28		10.80

Tin Boiler Plates.

IXX, 14 x 26	112 sheets	$12.50 @ $12.75
IXX, 14 x 28	112 sheets	12 75 @
IXX, 14 x 31	112 sheets	14.25 @

Copper.

DUTY: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

Ingot.

Lake	@ 18¢
"Anchor" Brand	@ 17.50¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 10, 1887, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		23	25	25	26	27	28	31	33
30		72	23	25	25	26	28	30	34	...
36	96		23	25	25	27	29	33	36	....
36		96	23	25	26	28	30	34	38	....
48	96		23	25	27	29	31	35	....	....
48		96	25	25	28	30	32	36	....	....
60	96		25	25	30	32	37	....	....	....
60		96	25	26	31	....	....	....	....	....
84	96		26	27	..	....	....	....	....	....
84		96	27	28	....	....	....	....	....	....
Over 84 in. wide			28	30	....	....	....	....	....	....

All Bath Tub Sheets..... 16 oz. 14 oz. 12 oz. 10 oz.
Per pound..... $0.28 0.30 0.32 0 35
Bolt Copper, ⅝ inch diameter and over, per pound..... 25¢
Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Circles over 60 inches diameter, up to 96 inches diameter inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.
Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

Per pound.

14 ounce to square foot and heavier..... 28¢
12 ounce and up to 14 ounce to square foot..... 29¢
10 ounce and up to 12 ounce..... 31¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢
Tinning sheets on one side, 30 x 60 each..... 30¢
For tinning boiler sizes, 9 in (sheets 14 in. x 60 in.), each..... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each..... 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each..... 12¢
Tinning sheets on one side, other sizes, per square foot..... 2½¢
For tinning both sides double the above prices.

Planished Copper.

Planished Copper List May 5, 1888..... Net

Brass and Copper Tubes.

Seamless Copper.			Seamless Brass.		
⅝ inch	₩ lb	50¢	⅝ inch	₩ lb	47¢
½	" "	44¢	½	" "	41¢
⅜	" "	42¢	⅜	" "	39¢
¼	" "	40¢	¼	" "	37¢
⅛	" "	39¢	⅛	" "	36¢
1	" "	37¢	1	" "	34¢
1½	" "	34¢	1½	" "	31¢

Roll and Sheet Brass.

Discount from list..... 10 @ 15 %

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	5½¢
"Bergenport"	8¾¢
"Bertha"	7¾ @ 8¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks	6½¢
Per lb	¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 3¢ ₩ lb.

American	5½¢
Newark	5½¢
Bar	6¢
Pipe, subject to trade discount	7¼¢
Tin-Lined Pipe, subject to trade discount	15¢
Block Tin Pipes subject to trade discount	45¢
Sheet, subject to trade discount	8¢

Solder.

½ @ ½ (Guaranteed)	15¢
Extra Wiping	13¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 13¾ @ 14¢
Hallett's	" 11¾¢

Plumbers' Brass Work.

	Discount per cent.
Ground Bibbs and Stops	55&10&2
Ground Stops, Hydrant Cocks, &c	55&10&2
Corporation Cocks	55&10&2
Corporation Cocks, "Mueller" Pattern, from Western list	55&10&2
Ground Basin and Shampooing Cocks	50&10&2
Compression Basin Cocks	50&10&2
Compression Basin and Sink Cocks	50&10&2
Compression Pantry Cocks	50&10&2
Compression Double Basin and Shampooing Cocks	50&10&2
Compression Double Bath Cocks	50&10&2
Compression Bibbs, Urinal Cocks, Sill Cocks, Stops, Hopper Cocks, Hydrant Cocks and Ball Cocks	50&10&2
Basin Plugs and Basin Grates	55&10&2
Bath and Wash Trav Plugs	55&10&2
Bath Wastes and Washers, Bath and Basin Valves, Sewer and Vacuum Valves, Cistern Valves, Pump Valves and Strainers, Ship Closet Valves and Suction Baskets	55&10&2
Basin Clamps, Basin Joints and Strainers	55&10&2
Boiler Couplings, Ground Face, per set $1.25	dis 10
Boiler Couplings, Plain Face, per set $1.20	dis 10
Water Back Valve and Plain Couplings, Soldering Nipples and Unions	55&10&2
Union Joints	60&10&2
Hydrant Nozzles, Handles and Guides, Sockets and Clamps, Street Washer Screws and Guides	55&10&2
Hose Goods	55&10&2

Steam and Gas Fitters' Brass and Iron Work.

	Discount per cent.
Brass Globe Valves	60&10&2
Finished Brass Globe Valves, with Finished Brass Wheels	40&10&2
Brass Globe Valves, with Patent Wood Wheels	60&10&2
Brass Globe Angle and Corner Valves	60&10&2
Brass Radiator Angle Valves	60&10&2
Brass Radiator Angle Valves, Frink's Patent	60&10&2
Brass Cross and Check Valves	60&10&2
Brass Check Valves	60&10&2
Brass Hose Valves	60&10&2
Brass and Iron Frink Valves	60&10&2
Brass Safety Valves	60&10&2
Brass Vacuum Valves	50&10&2
Brass Whistle Valves	60&10&2
Brass Balance, Back Pressure and Foot Valves	50&10&2
Brass Butterfly and Throttle Valves	50&10&2
Brass Pump Valves	50&10&2
Brass Steam Cocks	57½&10&2
Brass Service, Meter and Union Meter Cocks	57½&10&2
Brass Whistles, Water Gauges and Oil Cups	60&10&2
Brass Hollow Plug, Tallow and Globe Oil Cups	50&10&2
Brass Lubricators	60&10&2
Brass Air Valves	60&10&2
Brass Air Cocks	60&10&2
Brass Gauge Cocks	55&10&2
Brass Cylinder Cocks and Steam Bibbs	50&10&2
Brass Swing Joints and Expansion Joints	50&10&2
Brass Test Pumps	50&10&2
Brass Steam Fittings, Rough	60&10&2
Brass Steam Fittings, Finished	3 &10&2
Brass Union Joints	60&10&2
Brass Soldering Unions and Nipples	55&10&2
Brass Hose Fittings, Fusible and Boiler Plugs	55&10&2
Iron Body Globe, Angle, Cross and Check Valves	65&10&2
Iron Body Safety, Throttle, Back Pressure, Butterfly and Foot Valves	65&10&2
Iron Cocks, all Iron	65&10&2
All Iron Valves	65&10&2

Miscellaneous.

	Discount per cent.
Cast Iron Fittings	70&10
Plugs and Bushings	75&10
Malleable Iron Unions	67½
Malleable Iron Fittings	35

Paints.

Black, Lamp—Coach Painters'	₩ lb 22 @ 24¢
" Ordinary	6¢
Black, Ivory Drop, fair	12 @ 15¢
" " best	23¢
Black Paint, in oil....kegs, 8¢; assorted cans, 11¢	
Blue, Prussian, fair to best	40 @ 55¢
" " " in oil	45 @ 55¢
" Chinese dry	70¢
" Ultramarine	18 @ 30¢
Brown, Spanish	1¼¢
" Van Dyke	10 @ 12¢
Dryers, Patent American...ass'd cans, 9¢; kegs 7¢	
Green, Chrome	15 @ 23¢
Green, Chrome in oil	14 @ 18 @ 25¢
Green, Paris	good, 20¢; best, 25¢
Green, Paris in oil	good, 30¢; best, 35¢
Iron Paint, Bright Red	₩ lb 2¼¢
Iron Paint, Brown	₩ lb 1¼¢
Iron Paint, Purple	₩ lb 3¢
Iron Paint, Ground in oil, Bright Red	₩ lb 6½¢
Iron Paint, Ground in oil, Red	₩ lb 5½¢
Iron Paint, Ground in oil, Brown	₩ lb 5½¢
Iron Paint, Ground, Purple	₩ lb 6¢
Litharge	6½¢
Mineral Paints	2 @ 4¢
Orange Mineral	10¢
Red Lead, American	6½¢
Red Venetian (Eng.) dry	$1.65 @ $1.70
Red Venetian in oil...ass't'd cans, 11¢; kegs, 8¢	
Red Indian Dry	9 @ 12¢
Rose Pink	10 @